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September, 1946

EDISON ELECTRIC INSTITUTE BULLETIN

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UBLISHED MONTHLY BY EDISON ELECTRIC INSTITUTE

THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

July, 1945-1946

SOURCE AND DISPOSAL OF ENERGY—MONTH OF JULY

	1946	1945	%
GENERATION* (Net)			
By Fuel Burning Plants	12,200,851,000	12,252,138,000	− 0.4
By Water Power Plants	6,409,548,000	6,701,954,000	− 4.4
Total Generation	**18,610,399,000**	**18,954,092,000**	**− 1.8**
Add—Net Imports Over International Boundaries	172,414,000	178,626,000	− 3.5
Less—Company Use	125,653,000	116,619,000	+ 7.7
Less—Energy Used by Producer	224,417,000	234,299,000	.....
Net Energy for Distribution	**18,432,743,000**	**18,781,800,000**	**− 1.9**
Losses and Unaccounted for	2,824,783,000	2,507,606,000	+12.6
Sales to Ultimate Consumers	**15,607,960,000**	**16,274,194,000**	**− 4.1**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of July 31st			
Residential or Domestic	29,095,817	27,852,179	+ 4.5
Rural (Distinct Rural Rates)	1,319,624	1,194,027	+10.5
Commercial or Industrial:			
Small Light and Power	4,602,938	4,292,819	+ 6.8
Large Light and Power	170,980	178,562	
Other Customers	119,327	116,655	+ 2.3
Total Ultimate Customers	**35,308,686**	**33,634,242**	**+ 5.0**
KILOWATTHOUR SALES—During Month of July			
Residential or Domestic	2,883,398,000	2,602,947,000	+10.8
Rural (Distinct Rural Rates)	469,910,000	374,992,000	+25.3
Commercial or Industrial:			
Small Light and Power	2,718,298,000	2,438,621,000	+11.5
Large Light and Power	8,308,685,000	9,463,219,000	−12.2
Street and Highway Lighting	153,945,000	149,247,000	+ 3.1
Other Public Authorities	464,251,000	639,836,000	−27.4
Railways and Railroads:			
Street and Interurban Railways	345,346,000	343,919,000	+ 0.4
Electrified Steam Railroads	212,594,000	216,559,000	− 1.8
Interdepartmental	51,533,000	44,854,000	+14.9
Total to Ultimate Customers	**15,607,960,000**	**16,274,194,000**	**− 4.1**
Revenue from Ultimate Customers	**$279,659,300**	**$274,355,900**	**+ 1.9**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—for 12 months ended July 31st			
Kilowatthours per Customer	1,295	1,191	+ 8.7
Average Annual Bill	$42.61	$41.33	+ 3.1
Revenue per Kilowatthour	3.29¢	3.47¢	− 5.2

(*) By courtesy of the Federal Power Commission.

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EDISON ELECTRIC INSTITUTE BULLETIN

Volume 14 SEPTEMBER, 1946 No. 9

Value of Association Work

By Grover C. Neff

President, Edison Electric Institute

From a talk at the Annual Meeting of the Rocky Mountain Electrical League, Estes Park, Colo., September 5, 1946

ABOUT a year ago I sat in a meeting of about thirty utility executives who were earnestly discussing a subject and having great difficulty in agreeing. After the meeting had continued for about two hours without much progress being made, one of the younger executives got on his feet and said: "I have always thought that farmers were the most individualistic-minded people in the world and had the greatest difficulty in reaching an agreement, but after what I have heard here at this meeting I am satisfied that utility executives take first place."

It is probably a good thing that this is so, for if utility executives had not been of this type, it is a question whether or not the utility industry would have developed to the extent it has. To expand and develop as fast and as far as we have requires individualists, pioneers, men who are willing to take chances, try out new things and fight their way through difficulties. And as a result our country has an electricity supply system that is the envy of the rest of the world. Nowhere else is electric service used to the extent it is used in this country. The quality of service is high and the unit price to the customer has been steadily decreasing. The average price of household electricity is about one-half of what it was 20 years ago and is also less now than before the war.

It is probably because of the individuality of the utility executive that we have a number of national associations such as National Association of Electric Companies, Edison Illuminating Association, Edison Electric Institute, and the Advertising Group. There has been some criticism because we have different organizations of this kind, but apparently we have not as yet become of one mind sufficiently to have only one large national association.

The highly individualistic public utility executive can now choose and join the activity which in his opinion is the most important. It is true that some companies believe in national advertising and some do not, while some of the companies that do not believe in national advertising believe in the things the National Association of Electric Companies is doing; and there are some companies that do not believe in either one of those but belong to the Edison Electric Institute.

In fact, during the past six months a committee was formed to look into the question of consolidating these activities into one national association. After carefully studying the problem, that committee unanimously reported against consolidation at this time, but did recommend setting up a coordinating committee. Such a committee has been created, and while it has no powers to force anyone to do anything, it will, in my opinion, largely eliminate duplication of effort and will be very helpful in coordinating the activities of the various groups that are working on different problems confronting our industry. It may be that we get better results when the various companies group themselves behind the various activities in which they are most interested than we would if all of them were in one big association.

Our industry is big and growing rapidly and the problems we face are big and numerous. Personally, I cannot see how any utility executive can afford to keep his company from supporting all of these activities. There certainly is no duplication of effort between the EEI, the National Association of Electric Companies, and the Advertising Group —on the contrary they supplement each other, and I sincerely recommend that if you are not now supporting these three, you give it your serious consideration. Measured in the gross incomes of our respective companies, the cost of supporting all three is small indeed when compared with the benefits they bring to each of our companies.

This year I am particularly interested in the Edison Electric Institute and particularly urge you to support that organization not only financially but also by permitting your men to serve on its committees to help find solutions for the various problems of our industry. The EEI has fifty working committees that work largely on the various technical subjects of our business. The 600 people on these fifty committees are specialists in their respective lines and in their committee work we pool the experience and thinking of our best qualified people. Out of it we get results that are worth much to each of our companies. Anyone who has served on a committee knows the value of doing so. He not only is able to contribute but in most cases will get much of value out of committee deliberations.

You may be interested to know that last year the EEI sold 850,000 copies of committee reports and other publications put out by that association. This shows

the value placed on the committee work and reports of these committees.

The annual savings in the cost of insurance coverage for the industry as a whole as a result of the deliberations of the Insurance Committee alone have more than equaled the annual dues of the Institute. This one committee is mentioned because its benefits are readily measurable.

In addition to its committee work the EEI collects, compiles, and publishes full information on our operations. This is used by utility company executives, by the Advertising Group, by National Association of Electric Companies and by many others. If our industry does not furnish this information itself someone else will and we are all vitally concerned that the information be accurate and adequate.

The EEI also carries on effective sales promotion work and fosters research work in numerous lines. There isn't any question in my mind but that our companies have received benefits worth many times the cost of belonging to the Edison Electric Institute.

Of course, the national associations work on problems of national scope, but there are many questions that are local in character and must be treated locally. That is why we have state associations and regional associations such as you have here. These state or regional associations are very necessary if maximum results are to be obtained in efficient operation. The rural electrification problems in Georgia are different than those in Wisconsin. Likewise, the rural electrification problems in New England are different from the problems in the states represented here. While some of the problems are the same nationally others are not and these differences have to be taken into careful consideration by the local associations and satisfactory answers found to fit the local conditions.

Furthermore, the state or regional association gets closer to the day-by-day, grass-root problems of our business and it also affords a means for many of our operating people to get together to discuss these problems to the mutual benefit of all. We should at all times endeavor to bring about close cooperation between the activities of state or regional and national associations so that maximum benefits will accrue to our industry.

Thomas W. Martin Rural Electrification Award Is Resumed

THE Prize Awards Committee of the Edison Electric Institute has announced the resumption of the Thomas W. Martin Rural Electrification Award, which was suspended during the war years.

Offered annually again by Thomas W. Martin, President of the Alabama Power Company, to the electric operating company which makes the greatest contribution to the progress of rural electrification and agricultural advancement, the Award, since its establishment in 1932, has been a coveted token of distinction in the rural electrification field. In that year, 1932, electricity was serving approximately a half million farms, and rural electrification was just emerging from the necessary pioneering stage, instituted and carefully developed by the business-managed electric companies. In the intervening fourteen years, electrified farm homes have passed the three million mark, nearly two million of them being served by the privately operated utilities.

The gradual easing of war-time shortages of manpower and line construction materials is implementing the aggressive program of utilities to bring electricity to the farm and one result of this should be unusually keen competition for the Award this year, according to H. M. Sawyer, Chairman of the Prize Awards Committee.

If all agencies concerned with rural electrification continue with their present rate of growth, Mr. Sawyer said, the big job of connecting farmers to electric lines is expected to be almost completed by the end of 1948.

For the utilities, Mr. Sawyer added, the building of lines is only a means to the end of getting electric power efficiently applied in as many ways as is possible on farms, and which will prove profitable to the farmer. With labor costs increasing, the farmer must rely more on machinery and electric equipment to get his work done, and the utilities, in cooperation with state universities and other agencies, are developing new and better methods to apply power to farm operations.

"A healthy agriculture is vital to the economic welfare of the nation," Mr. Sawyer said. "The utilities, by extending the use of power to more farms, encouraging increased power use on presently connected farms, and working with farmers in their areas on such programs as livestock improvement, soil erosion and improved marketing methods, are helping to improve production and living standards on the nation's farms. The Martin Award serves to distinguish one company which each year proves outstanding in agricultural development—but that company is only one of many."

The Award, administered on a competitive basis by the Edison Electric Institute, consists of a handsome bronze plaque, on which the winning company's name is engraved, with suitable recognition of the accomplishment it symbolizes.

Mr. Martin, the donor of the Award, has long been known throughout the utility industry for his intense interest in rural electrification, and he and his company have been pioneers in active efforts to bring electric service to the rural people of Alabama. Indicative of the rural electrification programs of electric companies throughout the country is that of Mr. Martin's own company which has begun construction of an additional 6,500 miles of rural lines. When completed, these lines will make service available to approximately 95 per cent or more of the farms in the company's service area.

Companies submitting entries for the Martin Award will be judged on the following points: agricultural progress made within the company's territory, due to uses of electricity; development of the use of electric service on rural lines; cooperation with other agencies; extension of rural lines; organization and plans for rural development, such as marketing, stock improvement and soil erosion programs, which may or may not require the use of electricity, but will help raise farming and living standards in the area.

Note: Details of the terms and conditions of the Martin Award may be obtained from the Prize Awards Committee of the Edison Electric Institute, 420 Lexington Avenue, New York 17, N. Y.

New Rules Permit Use of Mobile Radio Service in Utility Operation and Maintenance

By Earle D. Glatzel

Vice Chairman, Committee 4, Panel 13, Radio Technical Planning Board

A RECENT Federal Communications Commission Order establishes a new radio communication service for Power Utilities. The detailed rules governing this service, covered in new Part 17 of the FCC Rules and Regulations, were made effective on September 12, 1946.

At the present time a number of Power Utilities are utilizing mobile communications systems as an aid in the prompt elimination of hazardous conditions and for the restoration of essential services (see accompanying list). These stations have in the past been licensed by the FCC as Special Emergency Stations under the Emergency Service. Under this classification their operation was restricted to the handling of emergency calls. The new rules authorize Power Utility stations to transmit communications essential to:

(1) Public safety, protection of life or important property;

(2) Operations in connection with the generation or production of electric power, manufactured or natural gas, and steam;

(3) Operations in connection with the transmission or distribution by wire lines or fixed pipe lines of electric power, manufactured or natural gas, water, steam; or,

(4) Operations in connection with the maintenance of transmission or distribution facilities.

The new Utility Radio Service will include three classes of stations: Power Utility, Transit Utility, and Petroleum Pipe Line stations. This grouping is based on the similarity of radio service requirements. Power Utilities are defined to include individuals, partnerships, corporations, and co-operative organizations engaged in supplying the public or members of a co-operative organization with electric power, natural or manufactured gas, water, or steam by fixed wire or pipe lines whether as the manufacturer or originator of such materials or as the distributor thereof.

The use of radio for Power Utility communications dates back to 1918. During the 1920's and early 30's, a few companies installed point-to-point radio stations as standby for wired communication circuits. The Rules and Regulations of the Federal Radio Commission and later the Federal Communications Commission restricted the use of these radio systems to essential emergency communications when normal wire circuits were inoperative. About 1935, equipment was developed which would operate satisfactorily in the 30-40 Mc band, and it became apparent that this new VHF equipment would provide a long-felt need for communications to mobile units. In 1936, ten frequencies in the 30-40 Mc band were allocated to Power Utilities on a shared basis with other services. Under the "Emergency Service" classification operation was restricted to essential communications in emergencies jeopardizing life, public safety, and important property. In the past ten years, even though limited to strictly emergency usage, a considerable number of Power companies have installed extensive mobile radio facilities.

It has been difficult to interpret just what constituted an emergency. The Commission now recognizes that a wider scope of service permitting full operational use may in many cases prevent the occurrence of an emergency. The Com-

FREQUENCIES AVAILABLE FOR ASSIGNMENT TO POWER UTILITY STATIONS*

The following frequencies may be assigned for use by licensees of Power Utility Stations previously authorized to operate Special Emergency Stations on these frequencies:

31,460 Kc	33,820 Kc**	2726 Kc (A-3 emission)
39,660 Kc	35,140 Kc**	3190 Kc (A-1 emission)
39,860 Kc	37,180 Kc**	2292 Kc (A-1, A-3 emission)
31,740 Kc**	37,820 Kc**	4637.5 Kc (A-1, A-3 emission, daytime only)
33,060 Kc**	39,340 Kc**	

Frequencies available for assignment to new systems. These assignments are on a temporary basis pending the adoption of a final frequency allocation plan. Present Special Emergency Stations, which have been reclassified under the new Utility Radio Service, may also be authorized to operate on one or more of the following channels:

30,860 Kc	33,580 Kc
31,980 Kc	39,980 Kc
33,020 Kc	
75,420 Kc	75,580 Kc
75,460 Kc	75,620 Kc
75,500 Kc	75,660 Kc
153,050 Kc	153,590 Kc
153,230 Kc	156,810 Kc
153,410 Kc	157,110 Kc

* As of September 12, 1946.
** Mobile operation only.

mission also recognizes that the use of a mobile radio system under a wider scope of service will assist the Utilities in rendering a better service to the public.

Under the new rules, unnecessary radio conversation is still prohibited, but land and mobile stations may be employed for the issuing of orders and instructions relative to the operation and maintenance of generation, transmission, or distribution facilities. The use of point-to-point service is, however, still restricted. Such service will be permitted only when the messages are of immediate importance to mobile or portable units, or when the normal wire communication facilities between the fixed points are inoperative, inadequate, or unavailable.

During the war it became apparent to the FCC that in the immediate postwar years there would be demands for a much more extensive use of radio by all services. These demands were incident to the many wartime developments and improvements in equipment and the anticipated release of frequencies exclusively occupied during the war by the armed forces. It was evident to the Commission and to the various groups concerned with these radio problems that many months of study and planning would be required before a solution to the frequency allocation problem, the establishments of standards, and the basis of new regulations could be worked out. Toward this end the Radio Technical Planning Board was organized at the suggestion of the Commission under the sponsorship of various professional societies and trade organizations including the Edison Electric Institute. Panel 13 of this Board was made responsible for studies, recommendations and coordination of the requirements of the emergency services such as police, fire, forestry, conservation, power, etc. Committee 4 of Panel 13, consisting of representatives of the electric power, gas, and water supply utilities, working in close cooperation with the Federal Communications Commission, did much of the detail planning in connection with the establishment of the new Utility Radio Service. This committee functioned to correlate the radio requirements of those utilities in order that a comprehensive picture and appropriate recommendations could be presented to the Commission.

A major difficulty facing the Commission was the fact that there were not

(*Continued on next page*)

COMPANIES HAVING EARLIER SPECIAL EMERGENCY SERVICE PERMITS

Electric, Gas, and Water Utilities and Petroleum Pipe Line Companies Having Radio Licenses or Construction Permits Under the Special Emergency Service, as of July 17, 1946.

Alabama

Alabama Electric Corp.
Birmingham Gas Company
Southern Natural Gas Co.

Arkansas

Arkansas Power and Light Co.
Little Rock, City of

California

California Electric Power Company
Coast Counties Gas and Electric Company
Long Beach, City of
Los Angeles Departments of Water and Power
Modesto Irrigation District
Pacific Gas and Electric Company
Pacific Lighting Corp.
San Diego Gas and Electric Company
Southern California Edison Company
Southern California Gas Company
Southern Counties Gas Co.
Standard Oil Co. of California
Superior Oil Co.

Colorado

Colorado and Southern Oregon Electric Co.
San Louis Valley Electric Cooperative, Inc.
Uncompahgre Valley Water Association

Connecticut

Connecticut Light and Power
Hartford Electric Light Co.
United Illuminating Company

Delaware

Delaware Power and Light Co.

District of Columbia

Potomac Electric Power Co.
Washington Gas Light Co.

Florida

Florida Power Corp.
Florida Power and Light Co.
Jacksonville, City of
St. Petersburg, City of

Georgia

Southern Natural Gas Co.

Idaho

Kootenai Rural Electric Corp.

Illinois

Commonwealth Edison
Illinois Electric and Gas Co.
Menard Electric Cooperative
Natural Gas Pipe Line Co. of America
Panhandle Eastern Pipeline Co.
Springfield Department of Public Works
Texoma Natural Gas Co.

Indiana

Huntington County Rural Electric Membership Corp.
Indiana General Service Corp.
Indiana and Michigan Electric Co.
Indiana Service Corp.
Indianapolis Power and Light Co.
Jackson County Rural Electric Membership Corp.
Northern Indiana Public Service Co.
Panhandle Eastern Pipeline Co.
Public Service Company of Indiana
Southeastern Indiana Power Co.

Iowa

Co-op. Electric Co.
Iowa Power and Light Co.

Kansas

Empire District Electric Co.
Kansas Gas and Electric Co.
Kansas-Nebraska Natural Gas Co.
Union Gas System

Kentucky

Louisville Gas and Electric
Kentucky Utilities
Tri-County Electric Membership Corp.

Louisiana

Gulf States Utilities Co.
Humble Oil and Refinery Co.
Interstate Natural Gas Co.
Louisiana Power and Light Co.
New Orleans Public Service Co.
Superior Oil Co.
Texas Company, The
United Gas Pipe Line Co.

Maryland

Consolidated Gas and Electric and Power Company
Washington Gas Light Co.
Washington Suburban Gas Company

Massachusetts

Boston Consolidated Gas
Boston Edison
Brockton Edison Co.
Cape & Vineyard Electric Co.
Central Massachusetts Electric Co.
Fitchburg Gas and Electric Light Co.
Holyoke Water Power Co.
Lawrence Gas and Electric Co.
New Bedford Gas and Edison Light Co.
New England Power Company
Plymouth County Electric Co.
Western Massachusetts Electric Co.

Michigan

Detroit Edison Co.
Tri-County Electric Corp.

Minnesota

Freeborn-Mower Cooperative Light and Power Corp.
McLeod Cooperative Power Association
Minneapolis Gas and Light Co.
Northern States Power Co.

Missouri

Empire District Electric Co.
Kansas City Power and Light Co.
Panhandle Eastern Pipe Line Co.
St. Joseph Light and Power Co.
Union Electric Company

Montana

Montana Power Company

New Hampshire

Exeter & Hampton Electric Co.

New Jersey

Atlantic City Electric Company
Public Service Electric & Gas Co.

New York

Adams Electric Light Co.
Buffalo Niagara Electric Corp.
Buffalo Water Dept.
Central New York Power Company
Consolidated Edison
Home Gas Company
Long Island Lighting Company
New York State Natural Gas Corp.
Orange & Rockland Electric Company
Queens Boro Gas & Electric Company
Rochester Gas and Electric Corp.

North Carolina
Carolina Power and Light Company

Ohio
Belmont Electric Cooperative
Cleveland, City of
Cleveland Electric Illuminating Co.
Columbus & Southern Ohio Electric Co.
Dayton Power and Light Company
Ohio Edison Company
Ohio Power Company
Ohio Public Service
Toledo Edison Company
Toledo Water Dept.

Oklahoma
Continental Pipe Line Company
Interstate Oil Pipe Line Company
Oklahoma Gas and Electric
Public Service Company of Oklahoma
Stanolind Pipe Line Company

Oregon
California Oregon Power Company
Northwestern Electric Company
Portland Gas and Coke Company
Portland General Electric Company

Pennsylvania
Central Electric Cooperative
Duquesne Light Company
New York State Natural Gas Corp.
Pennsylvania Electric Company
Pennsylvania Power and Light Co.
Peoples Natural Gas Company
Philadelphia Electric Company
West Penn Power Company

Rhode Island
Blackstone Valley Gas and Electric Company
Narragansett Electric Company

South Carolina
South Carolina Power Company
Tri-County Electric Membership Corp.

Tennessee
Chattanooga Electric Power Board
Cumberland Electric Membership Corp.
Knoxville, City of
Memphis Light Gas & Water Division
Middle Tennessee Electric Membership Corp.

Texas
B-K Electric Cooperative, Inc.
Beaumont Texas Water Department
Brazos River Transmission Electric Corp.
Central Power and Light Company
City Public Service of San Antonio
Continental Pipe Line Co.
Gulf State Utilities
Hill County Electric Cooperative
Houston Light & Power Company
Humble Oil and Refining Company
Hunt-Collin County Rural Electric Cooperative
Lower Colorado River Electric Cooperative Corp.
Magic Valley Electric Cooperative
Southwestern Public Service Company
Texas Electric Service Company
Warren Petroleum Corp.

Virginia
Appalachian Electric Power Company
Rosslyn Gas Company
Southside Electric Cooperative

Washington
Everett Water Department
Lincoln Electric Corp.
Public Utility District No. 1
Puget Sound Power and Light Company
Northwestern Electric Company
Seattle, City of
Washington Water Power Company

West Virginia
Appalachian Electric Power Company
Wheeling Electric Company

Wisconsin
Clark Electric Cooperative
Crawford Electric Cooperative
Dairyland Power Cooperative
Lafayette Electric Cooperative
Marshfield, City of
Northern States Power Company
Vernon Electric Cooperative
Wisconsin Electric Power
Wisconsin Gas and Electric Company
Wisconsin-Michigan Power Co.

NOTE: The foregoing compilation includes duplicate listings of some organizations which have been issued radio licenses in more than one state.

New Rules

(*Continued from page* 300)

enough frequencies in the usable part of the spectrum to fulfill all of the requirements for the expansion of the existing services as well as the contemplated new services. The Commission made an extensive study of this problem and in FCC Docket Proceeding No. 6651*, a general distribution of frequencies to the various classes of non-government services was made.

With respect to the requirements of Power Utilities, the Commission has taken a very broadminded approach in the solution of Power Utility communication problems. The establishment of a separate Utility Radio Service has permitted the preparation of new rules and regulations designed specifically to cover Power Utility requirements. These new rules constitute Part 17 of the Federal Communications Commission's Rules and Regulations, and they are designated as "Rules Governing Stations in the Utility Radio Service." Specific frequency channels have been asigned to this service, but most of these assignments are still on a temporary basis pending the approval of a final plan for the reallocation of frequencies to the various classes of non-government services.

Power Utilities who are now licensees of Special Emergency Radio Stations may request a change of classification of their stations to the new Utility Radio Service. Applications for such a reclassification should be submitted to the FCC in a notarized letter stating:

(a) Name of the licensee of the Special Emergency Station,

(b) File number of each valid station license,

(c) Call letters of present Special Emergency Stations, and

(d) Frequency or frequencies desired.

After obtaining a reclassification of their stations, Utilities who now operate Special Emergency Stations will be permitted to continue temporarily the operation of these stations on their presently assigned frequencies. This will permit operation under the broader scope of service without requiring immediate changes in radio equipment. The table on page 299 indicates these specific frequencies, also a group of new temporary frequencies which may be allocated to new Power Utility radio systems. It may be that these latter frequencies and a few of the former will be permanently assigned, but such action depends upon the outcome of final allocations in the 30-40 Mc and the 152-162 Mc bands, and also in the region below 30 Mc.

New systems which will operate within a radius of approximately 20 miles will be required to utilize either the 72-76 Mc or the 152-162 Mc bands. The 30-40 Mc band will be reserved for use where radio service covers more than one municipality or metropolitan area.

To save time and effort on the part of applicants and licensees and to speed the handling of its heavy post-war work load, the Commission has simplified many previous procedures and requirements. For example; the application form for Construction Permit for new stations has been reduced from eight pages containing 34 questions to a single page containing 15 questions. The records required to be kept by the licensee have also been simplified. In the radio log required at land stations, it is no longer necessary to make detailed entries for each communication. Considerable "red tape has been cut" in the matter of radio operator requirements; portable and mobile radio telephone stations operating on frequencies above 25 Mc may now be operated by unlicensed employees of the station licensee.

Since the major obstacles and restrictions which prevented the use of mobile radio by many Power Utilities have now been removed, radio becomes a more useful and practical tool for assisting in the elimination of hazardous conditions and in rendering a better service to the public. Many companies who have been operating radio systems on a strictly emergency basis are expanding and supplementing their facilities and others, who to date have considered mobile radio impracticable, are now planning to establish mobile communication systems under the new Utility Radio Service.

* See EEI BULLETIN, June 1945.

Electric Utilities and Leagues Distribute Over 85,000 Copies of Farmstead Wiring Handbook

Ed. Note: Data for the following article was obtained from the Farmstead Wiring Supplement, Adequate Wiring Reporter, July-August issue.

WIDESPREAD distribution of the "Handbook of Farmstead Wiring Design" is playing an important part in the programs of utilities and electrical leagues throughout the country to spur the development of adequate farm wiring. This handbook provides practical information on planning wiring systems for all types of farm buildings. Both illustrations and text are designed for easy understanding by readers without technical experience. Over 85,000 copies of the handbook have already been distributed to power companies and others interested in farm wiring, for use by rural representatives and presentation to customers.

A typical example of aggressive use of the handbook by a utility is the 10-point program of the Monongahela Power Company, which is intended to provide a copy of the handbook for every individual and group interested in farm wiring within the company area. According to J. R. Waters, residential promotion manager of the company, the program places special emphasis upon prospective rural customers, to assure that their wiring systems will be designed for efficient use of electrical equipment to be added in the future.

The company's program includes the following features:

1. Direct distribution of the handbook to all contractors, wiremen and electricians in the area, supplemented by wiring data supplied by manufacturers.
2. Direct distribution to teachers of vocational agricultural courses. Extra copies are available for classroom use if desired.
3. Distribution to county and home demonstration agents. The utility also provides extra copies to farmers at the suggestion of these agents, and has offered to make wiring layouts for all prospective customers obtained through this activity.
4. Distribution to prospective customers along the company's proposed rural lines, with a letter explaining the utility's free wiring layout service and offering personal advisory calls.
5. Offering the handbook to present customers, through a return coupon in customer publications delivered by meter readers.
6. Copies are sent to prospective home builders, whose names are secured by personal contacts, advertising, House of the Month Plan, and Dodge Reports.
7. Direct distribution to building contractors, supply companies, real estate men interested in the rural market, financial institutions and 4-H club leaders.
8. Wiring information from the handbook is used in programs held in connection with customer group meetings.
9. Contact personnel training courses employ information from the handbook.
10. Electrical instructors are given wiring data, based on the handbook, at regular discussion meetings.

Monongahela Power Company plans line construction to connect 12,000 rural customers within the next few years. According to Mr. Waters, copies of the handbook are sent to each new customer at the proper stage of pre-construction, with a description of the company's wiring plan service. Customers are urged to request the wiring plan service in advance of line construction, so that their farms will be reached for connection upon completion of the line, and they will be able to take full advantage of electric service when connected.

Each customer is provided with several copies of the wiring recommendations, so that he can secure bids from more than one contractor. Wiring plans are made after an analysis of the type of farming done by each customer, and take into consideration the profitable uses to which electricity could be put for increased production.

North Central Electrical Industries Wiring Program

A wiring informational program launched by North Central Electrical Industries, Minneapolis, Minn., is based on widespread publicity to keep the subject of adequate wiring of farmsteads a live discussion topic, and on distribution of the "Handbook of Farmstead Wiring Design" to key elements in the industry.

According to W. A. Ritt, Secretary-Manager of the League, copies of the handbook have been provided to utility companies, REA cooperatives, wholesalers and manufacturers' representatives, together with reprints of the January EEI BULLETIN article announcing publication of the handbook. Industry units have ordered hundreds of copies from the league office, Mr. Ritt reports, for free distribution to their customers.

Minnesota Electrical (Contractors) Council is providing complimentary copies to its 395 members, and the Electrical Inspectors Association will distribute 200 copies among its membership. Numerous reviews of the handbook have appeared in local trade bulletins and farm publications, according to Mr. Ritt.

The first 1,000 copies of the handbook purchased by the League will be entirely distributed very shortly, in addition to another 1,000 copies mailed out by Northern States Power Company. REA cooperatives are being encouraged to distribute the handbooks extensively among their members.

"While electrical contractors experienced difficulty in years back in selling the farmer on installing a sufficient number of convenience outlets to meet code requirements, the problem today is largely one of getting enough materials to install as many as the farmer or his wife and family want to have . . . if the farmer's economic position remains favorable, he will most likely accept the standards set forth in the Handbook of Farmstead Wiring Design," Mr. Ritt writes.

Buffalo Niagara Electric Corporation

All electrical contractors interested in wiring of rural homes and farmsteads in the territory of Buffalo Niagara Electric Corporation will receive complimentary copies of the "Handbook of Farmstead Wiring Design," the company has announced.

Copies will be distributed personally

(*Continued on page* 306)

For Several Chuckles—and Maybe a Little Self-Analysis

Leadership and What It Takes

By R. L. Lee

Employee Corporation Staff, General Motors Corporation, Detroit

A speech before the National Conference of Electric and Gas Utility Accountants—Customer Activities Group, Cincinnati, Ohio, April 1-3, 1946

I SOMETIMES feel that Employee Relations is only another way of saying how employees feel toward their bosses, in relation to how the bosses feel toward them—that feeling, that immeasurable something. And it seems to me that this vital essence rests very squarely upon an urge in every human being that was ever born, an urge, strong as the urge to breathe, to breed and to feed, to have the differences which separate him from the rank and file recognized and taken into account by those he deals with, by those he associates with, and by those he works with and for. *That* feeling. And I'm not so sure (and, believe me, I am convinced that you folks—and I am not so far removed from the accounting office end—manage to get by pretty well in relation to some of the industrial departments), I'm not so sure but that by the very nature of your business you have every reason to be concerned about some improvements in these relationships between those that we depend upon and you leaders. And that's why I feel we can take this subject, "Leadership and What it Takes," as not just a pleasant thing to talk about, but one of the key means of preserving the democratic and American way among our office people.

If we could only make it possible for any girl or man, down to the lowliest sweeper, to come into his or her work every day and be recognized as a separate distinct person, the only one of his or her kind in the world, and then make sure that every individual is contacted daily by those who know how to contact, I believe that the answer to the worry of a great many business leaders lies in that simple formula.

So I want to talk to you about this hobby of mine — LEADERSHIP. I have a scientific background where I, too, am sensible to facts and figures, and I have been trying to catch hold of leaders that I know are proficient in the art, or the science, of leadership, and sort of dissect them, putting them under a microscope to see how they are put together, make a sort of chemical analysis of their personalities to see what makes them click, to find out what they have that others do not have.

But I'll tell you one thing I think we ought to do before we get going here full blast. We ought to be sure now that we are all together as to what we mean by the word "Leadership". The English language is a peculiar one at its best. The same word doesn't mean the same thing to all who hear it.

LEADERSHIP — One can be the outstanding violinist in the state or the nation, be recognized by the entire musical profession as the leading violinist, and yet, fall flatter than a pancake trying to lead an orchestra. A teacher may be recognized as the leader of her profession, or a bookkeeper, or a salesman, and yet, none of them have what it takes to lead a group of individuals engaged in some cooperative activity.

I remember a Dutch pattern maker who could make patterns like nobody's business — in fact, this pattern maker could take the print of a casting which by all of the laws of good molding would prove couldn't be made, and yet, he was so good he would get the casting. He could even take my details and bring me back a casting, so, without a doubt, he was the leading pattern maker in that part of the country.

One day they called him into the office and said, "John, we want to apologize for not telling you how good you are and how much we appreciate your fine work. So here's what we are going to do. We're going to promote you—we are going to make you a foreman." John's reply was: "Pi Golly, if you do, I quidt! I have enuff troubles mit my own dumbness midtoudt fooling aroundt mit all dese odder dumb clucks you got in dese here place!"

Old John was a leader as far as pattern making was concerned, but not a leader of pattern makers. And the important thing is that he knew it. He knew that showing someone how patterns are made, and leading a group of pattern makers who already knew how to make patterns, are two entirely different jobs, and may require different men.

As we start out to build a new plant and get it into operation our big job is first to find out what is to be done and then how to do it. That is the mechanics of the job. Before we can put on all the people we will need to do the job, the chances are we will first try to find and hire people who have had experience in types of work as nearly like that required in our business as possible.

Once these men get the job to be done through their heads and learn how to do it themselves, we turn over to them the number of employes required for training. Now some of these trainers will be like my old friend, John the pattern maker, who can do things himself but who doesn't have what it takes to get other people to do what he can do.

Some of these trainers will look upon the crew given them to direct as helpers. They will try to do the job themselves with the help of the employes, just as the master molder in a jobbing foundry makes his castings with the help of his apprentices and helpers. The helpers riddle and temper the sand for him, they help him roll or lift the flasks, hand him the bellows, get boards he wants in a hurry. They help him pour; shake out the castings for him. *He* does the job and his employes help him do it.

Now, to my way of thinking, the difference between a supervisor who tries to do the job himself with the help of his employes and the supervisor who helps his employes do the jobs themselves is the biggest single difference between a poor supervisor and a good supervisor. One is the old fashioned bull-of-the-wood boss, and the other is the modern industrial executive and supervisor.

From what I have learned of the job confronting you, I don't think it can be done by old fashioned shop bosses or their office equivalent, no matter how much help is given them. Today, the former helpers have become the doers, and the bosses have become their helpers. This, gentlemen, is the state of affairs, and to my way of thinking, the recognition of this change is bound to be

the biggest single factor in the success or failure of any foreman or supervisor.

We might boil the situation down to this: The job we have undertaken cannot be done with a handful of experts—no matter how brilliant or experienced they are or how much help is given them. The job is going to be done by the majority of our employes, regardless of their past experience. From now on, our progress as foremen and supervisors will depend solely upon our ability to work through them as their leaders.

From the time I started to work I have been collecting leaders, as others collect stamps, arrowheads or match covers. I am proud of my collection because I am convinced that it contains some of the greatest industrial leaders in America today. While they all vary from each other in many respects, they are exactly alike in one—the most important, to my way of thinking.

Not one of them, as far as I know, became a leader as the result of a carefully laid out program of self promotion or an egotistical effort to rise head and shoulders above the crowd. Not one was blinded by the importance of "I." No one spent much time worrying about his progress or his position in relation to others. I have thought about this a great deal and the only way I can explain it is by this fact; one of the greatest discoveries, perhaps the only real discovery, I have made in my study of leaders—*It takes followers to make a leader!*

And we may rest assured that no one will follow another just because that person wants to get himself ahead, for leadership is an elective office in every sense of the word. The superintendent or manager does not promote us—he simply counts the votes cast by the followers who are convinced that they will be able to do more for themselves through their jobs by following the leader than they can by going it alone or following some other leader.

If an individual who cannot get the votes of those who follow is placed in a position which calls for leadership, all the authority management can give him cannot force his people to follow him. He might try to drive them or, through fear of losing their jobs, bulldoze them for a while into doing a poor half of what they are really capable of doing, but he can't get their best or anything near it. The best can only be secured through leadership.

What, then, do followers seek in a leader? What, then, does management seek in a leader? If it's the best we all want from each other, then the answers to these questions should be the same.

Here are some answers to the question of what a follower wants in a leader which I have picked up as a result of my own experience as a workman and the experience of other shop people:

1. He wants to follow a leader who is not afraid—not afraid of his position, not afraid of his own boss, not afraid of a tough job, not afraid of the people who work for him, not afraid of honest mistakes—either theirs or his.

2. He wants a leader who believes his work is important and all those who are in it with him.

3. He wants a leader who gets a kick out of his work and helps his followers get a kick out of theirs.

4. He wants a leader who gets a kick out of seeing a man do what that man thought he would never be able to do.

5. He wants a leader who will fight for him until Hell freezes over, if he believes him to be in the right.

6. He wants a leader who will tell him what is what when he knows darn well it's coming to him, and without losing his temper.

7. He wants a leader who recognizes him as a person, regardless of his experience, school or training, and regardless of his religion, race, station in life, or the lodge or union he belongs to.

8. He wants a leader who knows most of the answers but who will admit it if he doesn't know, and go get the answer.

9. He wants a leader who is predictable, that is, one he can depend upon being the same all the time. Not one of these bosses, you go in to some day and his secretary says, "For heaven's sake, don't go near him, he's in a heck of a mood today. Stay away from him!" And you go back the next time and she says, "Go on, kid, he's on the make today, Hit him." Predictable—on a steady keel. He doesn't want to have to psychoanalyze his boss all of the time. He wants to be able to spend some of his time on the problem he came to settle.

10. He wants a leader he can't put anything over on but who is human enough to look the other way when he occasionally makes an ass of himself.

11. He wants a leader he knows understands him, to whom he is not afraid to go when he has been a fool, when he's ashamed, when he's afraid, when he's about washed up, or when he's proud and happy.

12. He wants a leader that's as square as a die, who can't be bribed by anyone and, being square himself, can see through crookedness in any form, regardless of how much or how little crookedness there is.

13. He wants a leader he can get to when he really needs him and can get away from when he's through with him.

14. He wants a leader who can show him how to do a job without showing off or showing him up. It's the most humiliating experience on earth to be shown how by *some* bosses. They show you as though to say, "Any darn fool should be able to do this." Then there's another boss who shows you how and says, "Look, son," (or Daughter) "don't worry, I had even more trouble than you're having when I started."

15. He wants a leader who will give him a chance to try something hard he has never done.

16. He wants a leader who will listen to him when he has something to say but remembers an appointment when he drivels. When I say "listen," I mean not only with the ears, but with the mind and with the heart. Not condescendingly; not paternalistically; but man-to-man, two fellow creatures made by the same God. Listen! Here's an art that we could talk about all the rest of this day and yet not scratch the surface.

17. He wants a leader whom he believes sincerely wants him to succeed and will be proud of him when he does.

18. He wants a leader who seems to be trying to work himself out of his own job and his boys into it.

19. He wants a leader who respects his pride and never corrects him in the presence of others or gossips about him.

20. He wants a leader who knows all that's going on first handed and turns a deaf ear to gossip.

21. He wants a leader who, when he can't be loyal to his company or supervisors quits rather than work for them and talk about them at the same time. I know for a fact that although some bosses feel that they can best keep their following by halfway siding in with them against the folks they are working for. *It can't be done.*

22. He wants a leader with the authority to promote, demote or let him go, as he knows he deserves. He does not want to work for the assistant to the assistant to the assistant to the assistant. Everyone has a right to work for a full-fledged boss with authority.

I have given you my own personal conception of what I want in a leader and what men on the job have told me

they want in a leader. Maybe your conception will be somewhat different; however, in the main, I don't see how we can be very far apart. Because all people, regardless of their differences, are interested in themselves—proud of being themselves—all want to make the most of what the've got—all want to be recognized for what they are—all want the best they can do recognized—all want the chance to show what they can do—and all want someone to lean upon in their struggle to get what they want and to follow that person if he shows any promise of leading them when they don't know the way.

A few moments ago I told you of my pet hobby, that of collecting leaders who I am convinced are outstanding. Money in the bank or position was not used to measure their leadership, but the number of individuals they have helped build and lead into greater usefulness. I have studied these leaders carefully with the object of discovering traits and characteristics common to them all. I don't suppose I will ever discover all of the reasons for their outstanding leadership; however, I do believe I have uncovered a sufficient number of coincidental traits and characteristics to make them well worth running over today. So here they are for any use we can make of them.

Traits in Common to Leaders

1. All of my leaders seem to be so completely wrapped up in their jobs they can't spare the time to worry about the jobs they might get or other people who seemed to be getting ahead faster than they.

2. All my leaders seem to have found in their work not only a means of earning their living but a reason for living. If there is only one thing you take away and remember me by, I hope it will be this; if it's only one—all of my leaders seem to have found in their work, not only a means of earning a living, but a REASON FOR LIVING. God help the individuals who work for a living, for we can't live until we can find in our work, present work, a reason for living.

3. Most of my leaders have hides as thick as rhinoceros as far as their own personal pride is concerned, but are extremely sensitive to the pride of others and always on guard against hurting others needlessly.

4. Most of my leaders instinctively listen more than they talk, and talk only when they have something worth while and appropriate to say. When they listen they automatically sift out of the words they hear the nubbin of what the other fellow has on his mind. When they talk they use words the other fellow can understand, and no more than necessary.

5. Having faith in the ability of their work to speak for itself, they are not afraid of their jobs or anyone who threatens their jobs. This being the case, they are free from self-consciousness at all times and always themselves in any group whether top executives or the boys on the job.

6. Most of my leaders are not naturally inclined to invent, become authors, create systems, or to demonstrate their own personal talents or accomplishments publicly. Neither do they spend much time selling themselves.

7. With confidence in their work to speak for itself, but without arrogance and free from fear or awe of other people, they are in an unbiased position to recognize and evaluate the ability of others, encourage its development and to employ it to the best possible advantage of all concerned.

8. Free from fear for self, non-competitive toward others, and fair in their appraisal of others, my leaders win the confidence and respect of others who willingly accept them as referees, judges and counselors.

9. All of my leaders control their temper to a marked degree, do not give way to uncontrolled enthusiasm or despair, but move from day to day, from week to week, or an even keel.

10. All of my leaders, and I believe without exception, will not permit themselves to be bogged down with a multitude of unimportant details which cloud the main issue. They are naturally inclined to brush aside detail, with a nose for the key log in a jam. While they are patient with those who cannot see beyond detail, they will not permit these people to interfere with the removal of the key log.

11. All of my leaders have a highly developed sense of feeling of the lay of the land before they have facts to prove it. While respectful of facts and logic, they are able to read between the lines of those facts and anticipate the answer to a problem before it is available. In other words, my leaders all are logical but check their logic and that of others with their hunch or feeling toward the matter. (This intuition is sometimes called horse sense—that quality which, if possessed by one of two equally informed, makes the one a successful leader and the other questionable.)

12. Most of my leaders have the faculty of gaining confidence without having crushes on different individuals. Without personal entanglements or intimacies and the obligations they impose, most of my leaders are in a position to deal fairly, squarely and impartially with their followers on the basis of individual merit.

13. Most of my leaders are incapable of intense hatred, grudges or bitter quarrels, and are not conscious of having enemies. If you were to ask me for one formula for measuring leadership caliber, here would be one: I would suggest that the individual wishing to be "calibered" take a piece of paper and make a very careful list of all the various S.O.B.'s that he knows; and the longer that list, the lower the rating on the leadership scale.

14. All of my leaders give many more suggestions than orders. Take a sheet of paper and go back over the last two weeks, and in either one of two columns jot down the contacts, personal contacts, that you have had with your employees; the one column would be headed "Suggestions," and the other one is "Orders Given." "Suggestions Made" and "Orders Given." If you found that they were in the ratio of ten orders and one suggestion, put the one over the line and the ten under and give yourself a leadership rating of point one o. But if, on the other hand, you find that there are ten suggestions and one order, put the ten on the top of the line, the one under, and give yourself a rating of ten one hundredths times as high as the other.

Since I was a child I have been nuts about music and not only have studied it all my life but listened to it and attended many concerts—possibly hundreds. In all these years I have never yet heard one peep of a sound from the director's maple stick, no matter how wildly he waved it. Why, then, did he wave it? So that the individual effort of each and every musician in the orchestra added to that of his neighbor and accrued to a greater sum total in musical results than it could have without a leader who waved a maple stick.

I have never yet heard an orchestra worthy of the name in which its leader played solo, and I doubt whether I ever will, for the successful leader does everything he is going to do through the boys in his orchestra. He has the score in front of him with all the parts for all his men. He beats time for the benefit of all. He encourages those who lag. He slows down those who try to run away. He shushes those who play too loudly and ups those who play too low.

He succeeds through their performance —without them he is nothing.

It is a far cry from an orchestra producing music and our job of production, but in spite of the difference, I cannot get it out of my head that the extent to which each of us looks upon our leadership as a function identical with that of the orchestra leader will determine the kind of a job we are going to do man to man.

Outward Signs—How Do You Stand?

In conclusion, the thought occurred to me that we might jot down some of the outward signs of a leader which might be recognized in a person we have just met. Almost any of us can pick out leadership qualities in a person we have known for a long time. I have checked these signs over very carefully with a number of people whose experience and judgment I respect, so I don't think they are very far wrong.

1. A low voice and frequently slow and hesitating speech.
2. A neat appearance in moderate style. None of these wild hand-painted ties.
3. Rarely in a hurry. Doesn't have to be.
4. Easy gait and moderate pace.
5. Does not show all he feels and thinks.
6. Looks you squarely in the eye without staring.
7. Punctual.
8. Orderly. You can tell a lot about a man's character by the way he keeps his desk top or his dresser and clothes closet at home.
9. Accurate.
10. Decent. Some of the orneriest stories I ever heard in my life were told by my best leaders, but you know what I mean by a story that's decent and in order, related to the occasion, but decent just the same.
11. Laughs only when he means it, and then under control.
12. Rarely interrupts.
13. Rarely says "I."
14. Is not afraid to have others think he doesn't know when he doesn't.
15. Rarely tells everything he knows.
16. Makes sure you know the difference between his opinions and his facts.
17. Easy to meet and easy to leave.
18. Enjoys a contest of wits and a game of chance. But don't you go away from here saying Doc encouraged you to take up crap shooting to improve your leadership.
19. A good loser. There isn't such a thing as a perfect loser, everyone wants to win, but, a "good" loser.
20. Bored with too much logic.
21. Not usually a heavy reader. This seems strange, perhaps, but with this leader I'm talking about you see a good many detective novels lying around, I don't know why. Of course I'm not talking about the research man, the scientist and planner or arranger.
22. Hard to sweep off his feet.
23. Quickly gets the point.
24. Never takes himself too seriously. That's a dead giveway.
25. Doesn't like to do everything himself. Some folks would rather do something than instruct others how to do it. He's not like that.
26. Likes people.
27. Likes to lead.
28. Has assurance. Not cockiness, but assurance founded on fact and recollection of past accomplishment and mistakes, past and to come.
29. Not inclined to sit still for long. He's got to be out and around the office, see how they're coming, see how they are.
30. Good memory. An embarrassingly good memory.

I must confess that when I saw all of these specifications, traits and signs of leadership laid out in front of me for the first time I felt lower than a snake's belly. For, in comparison, I knew I fell far short of the mark.

However, I don't think that the greatest leader in all history could measure up to the leadership specifications we have just laid down. In fact, if he should be hired in through our employment department as a foreman, I doubt whether one week would ever go by in which we did not have him in on the carpet if we tried to hold him to the letter of the law as far as our leadership specifications are concerned.

When you stop to think of it, this isn't surprising. Did we ever turn out a perfect piece of work? Why do we have go and no-go plugs, high and low limits on our gages, and material specifications. We never in God's world would have had those gages unless we had a book of standards, would we? This is our book of standards, and every man here comes within the permissable tolerance. There isn't a man here, on the other hand, that doesn't know that he is lacking in some of these specifications.

The leadership of most of us has got to be somewhere between the high and low limits of our specifications or we wouldn't be supervisors at all. The ability to take constructive criticism should be added to our already long list of specifications for leadership. If we can't take it, the chances are we will never be able to hand it out to others with any hope of making it stick.

Farmstead Wiring Handbook

(*Continued from page* 302)

by the company's rural service representatives, who will review the book in detail with the contractors. The vital importance of adequate wiring of farmsteads to the continued success of the farm electrification program, and the desirability of meeting those standards outlined in the handbook, will be brought to the contractors' attention.

The utility company has also announced plans for holding a series of meetings with electrical contractors in rural districts during the early fall, prior to issuance of the new Electrical Code. At the meetings, the information contained in the handbook will again be discussed, and the audience reminded of the advantages of using it in connection with new and expanded installations of wiring systems.

2,500 Copies Distributed by Consumers Power Company

Consumers Power Company, Jackson, Mich., is distributing 2,500 copies of the handbook, to bring the standards to the attention of the electrical industry and others in its territory who are most interested in the farmstead wiring problem.

Cooperation with electrical contractors equipped to handle farm wiring, and with teachers of vocational agriculture in high schools in the company's area, is emphasized. H. J. Gallagher, general rural service supervisor of the company, considers the handbook to be of great value in assisting contractors in their job of encouraging farmers to install and expand their wiring systems so that electrical equipment, whether for farm and home use, can function economically and efficiently.

The agricultural vocational teacher's knowledge of up-to-date standards of farmstead wiring will assure that the younger generation is thoroughly familiar with the advantages of adequate wiring, and will never be satisfied with less than a modern, efficient wiring system in their farms and homes, it is felt.

Automatic Pressure Water Systems

By Carl Neitzke

State Rural Electric Coordinator, College of Agriculture, University of Wisconsin

A talk given at 4-H Leadership Training Camps in Wisconsin

WE all know that the first use that is made of electricity on all farms is for lights. Some of the next uses made of electricity on most farms are for radios, electric irons, washing machines and milking machines. I believe after getting lights and some of the smaller pieces of electric equipment every Wisconsin farmer should install an automatic electric pressure water system. Therefore, we want to devote this session to that topic.

There are two reasons why we chose to do this; first, the need for water systems is great, and secondly, there are many benefits in having a complete automatic pressure water system on the farm. These benefits are:

1. Saves time.
2. Reduces labor.
3. Improves family health.
4. Provides fire protection.
5. Increases milk production.
6. Increases value of property.
7. Makes possible a modern house.
8. Provides water for sprinkling the lawn.
9. Provides water for irrigating the garden.
10. Increases happiness and contentment of the family.

I want to briefly discuss each of these benefits with you, but before I do that I had better explain to you what I mean by a complete automatic pressure water system.

A pressure water system consists of a motor driven pump, a storage tank, pressure switch and volume control. The motor driven pump takes water from the well or other source of supply and puts it into the storage tank. The tank is filled with air which is compressed by the incoming water. The pump delivers water into the tank until the pressure reaches the desired point (usually 40 lbs per square inch). At this point the pressure switch automatically breaks the electric circuit to the motor which stops the motor and pump. The water is now under pressure which will force the water out of the tank through the discharge pipes leading to the house, barn, etc. As water is drawn by the various plumbing fixtures and other outlets, the pressure in the tank falls and when it reaches a given point (usually 20 lbs per square inch) the pressure switch again automatically operates. It closes the electric circuit which starts the motor and pump. In this way water is kept in the tank at all times under pressure varying from 20 to 40 lbs. The air volume control automatically regulates and maintains the correct relation between volume of air and the quantity of water in the pressure tank.

By a complete system, I mean one that provides water under pressure at the turn of a faucet, in the barn, house, milk house, poultry and hog house and any other place on the farmstead where water is used in large quantities. Now we are ready briefly to discuss each of the benefits of having an automatic pressure water system.

We say it saves time—let's see how much time. This will vary with the size of the farm, number in the family, etc. Careful records kept on two West Virginia farms showed that on the E. R. Seaman farm in Roane County, it took 769 hours a year to pump water by hand and carry it to the house, barn, etc. On the M. C. Fried farm in Pocahontas County the family members spent 273 hours to pump water and carry it where it was used. You can see from these two examples that there is a wide variation.

In general one can figure that it takes about 15 minutes to pump 100 gallons of water by hand. Then if the amount of water that is used on a farm is known it is easy to figure just how much time is spent pumping water. Now if we put electricity to work pumping water, we can save all of that time. What does it cost to pump water using electricity? That of course will vary with the depth of the well and the electric rate. If the electric rate is 5c. per kwhr, which is high, and our well is, let us say, 50 ft deep, it will cost about ½c. to pump 100 gal of water.

Records kept on many Wisconsin farms show that the average cost of pumping water on farms that have shallow wells is about 50c. per month. Farms that have deep wells pay about 75c. per month for the electric energy used to pump water.

How does a pressure water system reduce labor? When water is put under pressure it flows through pipes because of the pressure and so it does not have to be carried to the place where we want to use it. Carrying water is work or labor of the drudgery kind. Many steps, yes many miles are traveled each year carrying water.

The members of the Seaman family walked 124 miles a year carrying 15,042 gal of water to the house, barn and chicken house. The members of the Fried family walked 235 miles to carry 20,000 gal of water to the house and to the hogs, sheep and chickens.

Now let's see how electricity can carry water for us and what it will cost. Electricity actually cannot carry water, but it can put water under pressure and then it will flow to the house, barn, poultry house or wherever the water is piped. One kwhr of electricity will put 1000 gal of water under pressure and will force it through a 1-in. pipe for 3000 ft and will deliver it at the rate of 5 gal per min. In other words, 5c. worth of electricity will force or carry 100 10-gal milk cans full of water for more than one-half mile and will get it there in about 3 hr. If we think in terms of the farmstead, this 5c. worth of electricity will carry 10 gal of water per day from the pump to the poultry house for 3 months. Thus you can readily see that piping water to where it is used not only reduces labor, but it also saves much time, and at a very low cost.

I wonder how many of you would go to work for me tomorrow to pump and carry water for the same pay as I can get the work done for by electricity.

Water under pressure results in improved sanitary facilities such as bath, flush toilet, etc., which results in improved health. It also provides fresh

drinking water at the faucet at all times. This results in a greater water consumption and that means better health. We are told to drink eight to 10 glasses of water per day. With water available at the turn of a faucet we are more apt to drink that much water than when we have to go to a water pail and find it empty. In the state of Wisconsin there has been a definite drop in the number of deaths from typhoid, dysentery, diarrhea and enteritis, all of which are water borne diseases. In 1910 at which time very little work had been done relative to pure drinking water, there were 2559 deaths in Wisconsin from these causes. As a result of emphasis on the part of the State Board of Health, the College of Agriculture and other agencies, in promoting safe water systems, the number of deaths from these causes has dropped to the low figure of 136 in 1945 for Wisconsin. For the sake of health, we need pressure water systems.

Many a farm fire can be put out in its early stages if we have water under pressure. True, the amount of fire protection is limited, that is, it is of little or no value in fighing a fire that is well under way, but it can protect and save the farm buildings that are located near the one that is burning. At any rate, water under pressure is far more effective than a bucket brigade putting out fires. Too often too little emphasis is given to this benefit of a water system. When installing a farm water system be sure to provide a few hose connections so that a hose can be used in case of fire. Also, be sure that the water system has an individual electric circuit of its own, coming directly from the main service entrance, so that in the event of a house or barn fire the electric service to the motor on the pump will not be interrupted.

Water under pressure makes it possible to provide drinking cups for our dairy cows. It has been proven that cows that have access to water at all times will produce more milk than cows that get water only one or two times a day. The amount of increase varies considerably depending upon the conditions existing before drinking cups are put into the barn. Figures given by farmers and experiment stations show a spread of from 5 to 20 per cent increase. That this is true is evidenced by the fact that so many farms in Wisconsin do have drinking cups in the barn. When milk production is increased our profits are increased and that means more money for other things that we want to buy. That's what we are all after.

There isn't any question about the fact that a farm that is equipped with a complete automatic pressure water system will sell for more money than if it were not so equipped. The increase in the selling price will be many times more than the cost of the installation of a water system.

Further, a farm so equipped will rent for more money and will attract a higher class of tenants. The tenant and his family will be more satisfied and will remain for a longer period of years. This is very desirable and we should have more of it.

All in all, it doesn't cost to put in a water system, it pays.

One of the greatest benefits in having a pressure water system is that it makes it possible to have a modern house. By a modern house I mean a house that has a convenient kitchen with an ever ready supply of water at the turn of a faucet for cooking, drinking, washing dishes, etc. This results in a great saving of labor and time in preparing meals. The modern house also has a bathroom with its flush toilet, lavatory and bath tub or shower. The modern house also has a labor and time saving utility room where the family clothes washing and ironing is done, and where meats and vegetables can be prepared for preservation by canning or freezing. Electricity enables us to have a fully automatic pressure water system which in turn makes it possible to have these conveniences that make a modern farm home. Without an automatic pressure water system it is not possible to have these time and labor saving conveniences. I am sure that we are all agreed that every farm house should have these conveniences and comforts. Your mothers and my mother should have them.

When we have water under pressure it is possible to do an effective job of sprinkling the lawn. This does not increase farm profits, but a nice green lawn certainly adds to the attractiveness and beauty of our farm and makes it a more pleasant place to live. Greater pride is taken in such a home and this in turn results in better over-all conditions. With pressure water systems on the farm we can have a fresh, cool, green lawn even in the driest weather.

Probably the greatest limiting factor in vegetable production is rainfall. To say the least it is very discouraging to have our garden crops wilt and dry up, as a result of a prolonged dry spell after we have spent many hard hours of labor preparing the seed bed, planting the vegetables and hoeing and weeding. With water under pressure it is possible to begin watering when it begins to get dry. This not only prevents complete crop failure, but it increases production of vegetables more than we might expect. The amount of increase depends, of course, upon how prolonged the dry spell would have been.

Irrigating or watering the garden is really a sound investment and is definitely a benefit of automatic pressure water systems.

Last but not least and perhaps more important than any one or all of the other benefits just named is the increased happiness and contentment of the family. Certainly we are interested in the increased farm income made possible by a pressure water system, but at the same time if the farm family isn't happier and more contented as a result of the increased income we had better not have it. In this case, however, we get both. Every member of the farm family is happier and more contented on the farm because of all of these benefits. One of the main reasons why many farm boys and girls do not choose to stay on the farm is because the farm home is not modern. Well, we have pointed out that an electrified farm home with an automatic pressure water system can be just as modern as a city home. There isn't any doubt about the fact that life on the farm needs to be made easier, more convenient and more profitable, so that it will keep its best sons and daughters on the farm. A strong sound agriculture cannot be maintained if the farm continually loses its best sons and daughters to the city. It is my sincere feeling that automatic pressure water systems will do more to maintain a stable agriculture than any other single improvement that can be made on the farm. A happy, contented farm family means so much and a pressure water system does so much toward making the farm family content and happy.

After giving careful thought to the benefits of a pressure water system there can be only one conclusion. Every Wisconsin farm needs and should have an automatic pressure water system. I am wondering how many of you in this room

have a water system on your farm. Do you know that only one out of every five farms in Wisconsin has a pressure water system? Think of it. I am quite sure that all of you will agree with me that there is a very definite need for a pressure water system on the farm.

Having discussed the benefits to be had from and the need for pressure water system, we are now ready to discuss some of the points to consider when installing a farm water system. A thorough discussion of each of these points is not possible at this time.

I am also quite certain that you will not want to enter into a lengthy discussion of these points at your local 4-H Club meeting. On the other hand, I do think a brief discussion of each of these points is in order. It will help the club member to realize that there are some definite points that must be given attention when installing a water system. Each of these points will require further study on the part of the person who is installing a water system. It is not your responsibility to tell and show your club members how to do the job, but simply to interest them in the need for a water system on their farm and to inform them that these points need to be considered.

POINTS TO CONSIDER WHEN INSTALLING A FARM WATER SYSTEM

1. Have water tested for purity.

A. Send for sample bottle from State Laboratory

B. When sample bottle arrives take water sample, following directions enclosed with bottle. Return sample to laboratory. (Names and addresses of Wisconsin laboratories were here given.)

2. Conform to regulations.

Pure drinking water is essential. To insure this the State Board of Health has prescribed certain minimum, uniform standards and regulations for the construction of wells and installation of pumping equipment. Write to the Wisconsin State Board of Health, Madison 2, Wisconsin, for a copy of "Wisconsin Well Construction Code," for your guidance.

3. Dependable supply important.

The supply should be abundant. When water is carried to the house the amount used seldom exceeds 5 gal per person per day, when supplied by an automatic pressure system, 30 gal per person per day is often used. Likewise, when we have water piped to the barn, poultry house, hog house and milk house, more water will be used than before the water was so readily available. Oftentimes, wells that formerly supplied enough water may be pumped dry when an automatic water system is installed. The dependability of a well can be determined by: (1) constant use, (2) by a continuous period of pumping, and (3) by observing variations in water level in the well over a period of time.

4. Locating a new well.

A new well should be located on a well-drained site, not less than 50 ft (preferably more) from contaminating sources such as barnyard, hog pens, privies, etc. On farmsteads where the house and barn are far apart, a somewhat central location is desirable. In general, locating it 3 to 5 ft from the house permits the pit to be connected with the basement, and has the advantage of being readily accessible from the basement for servicing or repairs. See well construction code for minimum requirements.

5. Water requirements.

In selecting the system consideration should be given to the amount of water used. The following table will serve as a guide in figuring the amount used:

Approximate Water Requirements Per Day

Each member in the family	25- 35	gallons	
Each cow	20- 30	"	
Each horse	10- 15	"	
Each hog	2	"	
Each sheep	2	"	
Each 100 chickens	4	"	
Other uses:			
Garden irrigation (¾ in. hose)	300	"	per hour
Lawn sprinkling	300	"	" "
Cooling milk (¾ in. pipe)	400	"	" "

6. Selecting the pump

There are two general types of pumps.

1. Shallow well pumps are used where the depth of water does not exceed 22 ft. There are a number of different kinds of shallow well pumps:

a. Reciprocating or plunger
b. Turbine
c. Jet
d. Rotary gear
e. Centrifugal

} Most commonly used

2. Deep well pumps are used where the water is more than 22 ft from the pump to the water level. There are two types of pumps commonly used:

a. Plunger type
b. Jet pump

The pump selected should have sufficient capacity (gallons per hour) to supply the amount of water required as per table given above. First figure the estimated daily water consumption for the farm in gallons. Divide this figure by three and the result will be the capacity of the pump needed in gallons per hour. A pump having a capacity of 300 to 400 gal per hr is required on most farms.

7. Type of cylinder.

The cylinder is the most important part of a plunger type deep well installation. The success of the entire pump system depends upon the cylinder's uninterrupted and efficient performance. When selecting a cylinder it is poor economy to select anything but the best.

A. Size of cylinder under ordinary conditions.

1. A 2¼ to 3 in. cylinder is adequate.

B. Type of cylinder.

1. Open type cylinder—The use of this type of cylinder is recommended wherever the well casing is large enough. It is so constructed that the pump rod, piston and check valve in the bottom of the cylinder can be withdrawn without pulling up the cylinder and heavy drop pipe. A second advantage of this type of cylinder is that less power is required to pump a given amount of water. A drop pipe slightly larger than the cylinder must be used, thus increasing the cost.

2. Closed type cylinder—With the closed type cylinder a drop pipe smaller than the cylinder is used, thus reducing the cost. However, the entire drop pipe must be pulled up to repair the cylinder.

8. Pressure tank and accessories.

A galvanized tank is preferred. It should have a test pressure of at least 125 lbs. The pressure tanks most com-

monly used on farms vary in size from 42 to 120 gal. In general, a tank of 80 gal capacity is satisfactory for ordinary conditions. It should be located near the pump if possible. A pressure switch set to start at 20 lb and stop at 40 lb pressure makes the system automatic. It can be installed on either the air dome or on the pressure tank.

If the pressure tank is more than 3 or 4 ft from the pump an air dome should be provided. The automatic air volume control is an essential part of the system. It regulates the amount of air in the pressure tank.

9. Electric motors.

Because the electric motor starts the pump against pressure, it must have a high starting torque. The two types of motors most commonly used are the repulsion-induction type and the capacitor type. The size of the motor needed is variable with the system, depending upon the amount of water to be pumped, depth to water, etc. In general, a ½ to 1 hp motor will operate most water systems. Check with your power supplier on the exact motor requirements before purchasing.

10. The well pit.

A. Size—Not less than 4 ft x 6 ft, and should have a minimum height of 6 ft 6 in so as to be comfortable or convenient to work in. B. Material—The well pit should be made of concrete. The walls should be 6 in. thick, the floor 4 in. thick and the deck should be 5 in. thick. The deck or cover should be reinforced with ⅜ in. rods spaced 1 ft apart running in both directions to insure strength and durability. The concrete should be of good quality. A recommended mixture is one part cement, two and one-quarter parts sand and three parts gravel, using not more than 5½ gal of water. C. Drainage—Provisions should be made for draining the well pit by: 1. Making a watertight sump pit and using sump pump to remove any water that may accumulate.

2. Draining into a tile drainage system or into a separate seepage pit.

D. Openings in deck—A manhole opening, preferably located in one corner to permit easy access into the pit and large enough for the pump and tank to pass through. This manhole should have a shoulder or ridge 2 to 4 in. high around the edge of the hole. This serves to keep surface water from running into the pit. A small opening about 8 or 10 in. in diameter directly over the well for lifting the pipe. It may be possible to have the one large manhole serve both purposes. E. Cover for openings—The covers for the large manhole should be made from concrete, or of planks covered with tin. The small opening can be plugged with a piece of wood and then covered with asphalt to make watertight. F. Ventilation—Two 4 in. soil pipes, located in opposite corners, one extending just through the cover, and the other extending through the cover and down to within a few inches of the floor will provide the necessary ventilation. The tops of both pipes should be provided with ventilator caps, "tees" or return ells. The ventilation pipes should be closed during cold weather to prevent freezing. (Refer to the code for minimum requirements—University of Wisconsin, College of Agriculture, Agricultural Engineering Department, February, 1946.)

All of the points are very important and careful attention must be given to each of them. Small details must not be overlooked or we will not have a completely satisfactory installation. Additional helpful information will be found in these circulars:

1. Farmstead Water Supply—Farmers' Bulletin No. 1448.
2. Illustrated literature from pump companies.
3. Mail order houses have publications on running water.
4. Your electric power company (both private and cooperative) will have literature on the subject.

The third and last phase of this topic that I want to discuss with you is something about the cost of a farm water system such as I have just described. The cost, of course, will vary with each individual installation because of differences in depth of well, capacity of pump, etc. A typical system which includes the pump head, electric motor, pressure tank, pressure switch, automatic air volume control and the necessary pipe fittings and valves used between the pump and the tank, can be purchased for about the same cost as a good 10-ft grain drill. The grain drill is used four or five days out of the year by one member of the family, while the water system will be used by all members of the family from age two to 92 and older, not four or five days of the year, but every day of the year. No single piece of equipment on the farm will save as much time and labor as will a water system. Electric water systems are the cheapest and most efficient hired help anyone can get on a farm. No farm should be without this improvement. Farmers that have pressure water system say, "It is the best investment we have ever made." No other improvement will do as much as the electric water system will do to provide good health and extra leisure on the farm. When a farmer says that if he had to make a choice between keeping his Buick car or his automatic water system, he would choose to keep the water system, you can begin to see what value is placed on water systems. A water system doesn't cost—it pays.

Finally, what can you do? I should like to ask you to do three things which I feel will help stimulate interest in pressure water systems. I would like to ask you to devote one club meeting per year to a discussion of "Pressure Water Systems on the Farm." If every one of the 2000 4-H Clubs in the state would do this, then a total of about 32,000 club members in Wisconsin would have their interest aroused in water systems. This certainly would result in the installation of many water systems.

A second request that I would like to make of you is that you encourage your older club members to enroll in the Farm and Home Electrification Projects, taking Project II, which deals with "Automatic Water Pressure Systems." If only two club members out of every 100 club members in the state enrolled in this project it would mean about 640 more farms with an automatic pressure water system. True, this is not a large number, but if this program were continued for the next 10 years a considerable number of installations would result.

Finally, have your club put up a water-systems booth at the local 4-H Round-Up or County Fair. Local electric service companies and local pump dealers, if asked, will cooperate with you in putting up such a booth. Many people would see such an exhibit, which would result in the installation of many more water systems.

Every bit of effort put forth by you to stimulate interest in and show the need for pressure water systems will help get water systems on more Wisconsin farms. Won't you help by doing one or all of the things suggested?

Coordinated Graphic Symbols for Electric Power and Control Drawings

Approval of the 1946 Edition of American Standard Graphical Symbols for Electric Power and Control Is One More Step Toward a Unified System

By W. L. Heard

Chairman, ASA Sectional Committee on Graphical Symbols and Abbreviations for Use on Drawings

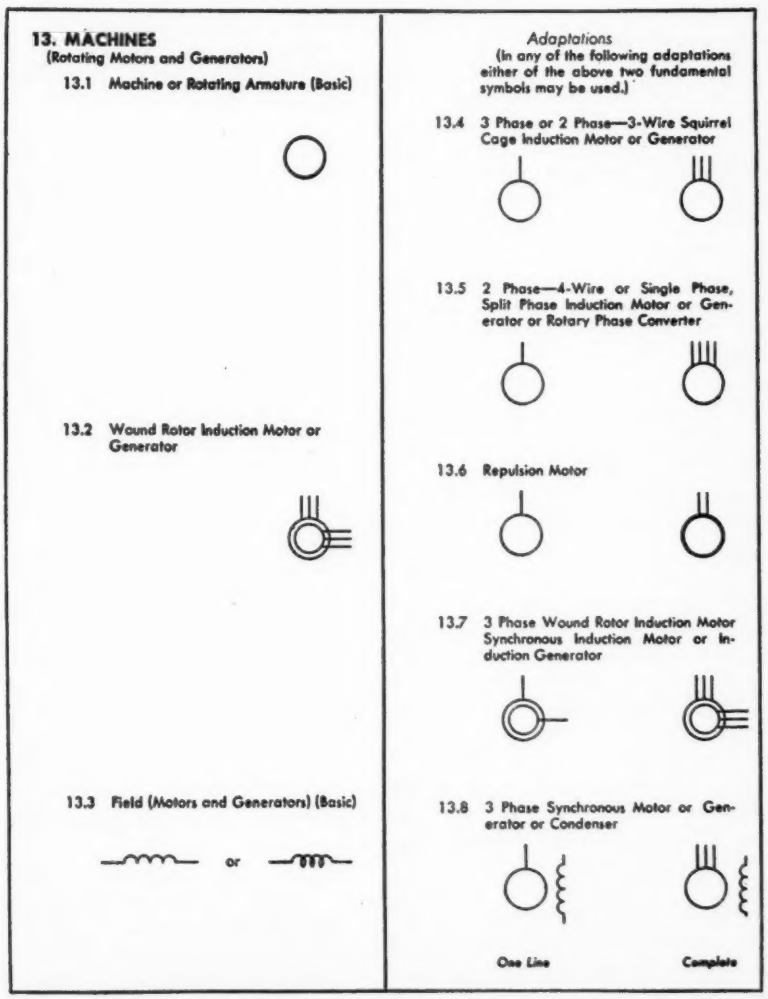
NATIONAL STANDARDIZATION of graphical symbols for use on drawings has been going forward for many years, but progress toward the desirable ultimate goal of one general basic standard for all fields has been rather slow. This has been true because in the past the electrical endeavor has in general been divided into two large fields which have grown up almost independently of each other with very little overlapping of the use of drawings between them. The one field has to do with the distribution and use of electrical energy itself and is generally known by the term "Power," while the other is concerned with the transmission of electrical signals and is usually referred to as "Communications."

This divergence is also due, to some extent, to the different usages to which the apparatus is put in each field and to the different requirements which must be met in these separate fields. To illustrate, stray fields in communication necessitate accurate poling and placing of apparatus to prevent interference with the transmission of talking or signaling currents. This occurs because most of the communication circuits are of small amperage. This accurate poling is not required in power where the currents are usually heavy and small stray fields have no appreciable effect on the circuits.

War Standards Met War Needs

The war made it necessary to rush certain phases of standardization in order that industry could meet the requirements of production which engulfed it in the war period. During this time the general lines between power and communications became rather indistinct because of the different uses to which war needs put the transmission of electrical signals; in many cases, this transmission was merely a means of controlling power-driven appliances.

Also, with the advent of the war, the armed forces began to feel the need of further standardization of electrical symbols. They found that in the drawings they were receiving from the power field and from the communication field identical symbols frequently depicted entirely different devices and different symbols were often used for the same or similar devices. This was due to the fact that equipment was being manufactured


13. MACHINES
(Rotating Motors and Generators)
13.1 Machine or Rotating Armature (Basic)
13.2 Wound Rotor Induction Motor or Generator
13.3 Field (Motors and Generators) (Basic)
or
Adaptations
(In any of the following adaptations either of the above two fundamental symbols may be used.)
13.4 3 Phase or 2 Phase—3-Wire Squirrel Cage Induction Motor or Generator
13.5 2 Phase—4-Wire or Single Phase, Split Phase Induction Motor or Generator or Rotary Phase Converter
13.6 Repulsion Motor
13.7 3 Phase Wound Rotor Induction Motor Synchronous Induction Motor or Induction Generator
13.8 3 Phase Synchronous Motor or Generator or Condenser
One Line
Complete

A Typical Page from the New American Standard Graphical Symbols for Electric Power and Control

wherever there might be facilities for it, and not in the usual channels of power or cummunication manufacture. This made it confusing for the armed forces inasmuch as they faced the necessity of training large numbers of new technicians and operators and the lack of uniformity in drawings was a serious drawback.

Industry Encountered Problem

The problem was also encountered by industry which found itself manufacturing the same basic equipment although required to furnish different drawings to different branches of the armed services. In addition, industries using electric equipment and electric components such as capacitors, resistors, etc., would receive drawings of apparatus of the same general description furnished by different manufacturers but using quite different symbols, depending upon the source of manufacture.

On April 18, 1944, therefore, the American War Standard Coordination of Electrical Graphical Symbols, Z32.11-1944, was issued as a wartime expedient to produce a standard for the war effort which would eliminate any direct conflicts within the two general divisions of industry. This has been found satisfactory as a means of lessening many of the difficulties met in depicting apparatus on drawings for the armed forces. For example, prior to the issuance of Z32.11-1944, —∿∿— in power would indicate a coil with a magnetic core, while in communications the same symbol indicated a resistor in the circuit. Also, —⊣⊢— indicated an open contact in power, whereas on a communications drawing it would indicate a capacitor.

With the ending of the war, these symbols would have passed out of existence had they not been incorporated in the peacetime standards, American Standard Graphical Symbols for Electric Power and Control, Z32.3-1946, and American Standard Graphical Symbols for Telephone, Telegraph and Radio Use, Z32.5-1944. The new edition of the American Standard Graphical Symbols for Electric Power and Control, Z32.3-1946, incorporates the symbols suggested in the American War Standard Coordination of Electrical Graphical Symbols, with other minor revisions which have been made to bring the standard up to date with the general usage now being followed. This revised standard is now available for general distribution and use.

Work Shaping Up Towards Issuing One General Standard

In addition to the work now completed on symbols for power and communications, it is intended that other graphical symbols will be issued for use in electrical engineering. A proposed standard which will provide basic graphical symbols for all electric apparatus, Z32.12, is already in tentative form to be issued in the near future. When finally released, it will be used as a basis for separate standards for individual industries where it is believed a separate standard would be useful. At present the following standards have been issued or will be issued shortly:

Graphical Symbols for Electric Power and Control, Z32.3-1946;
Graphical Symbols for Telephone, Telegraph and Radio Use, Z32.5-1944;
Graphical Electrical Symbols for Architectural Plans, Z32.9-1943;
Graphical Symbols for Electronic Devices, Z32.10-1944;
Basic Graphical Symbols for Electric Apparatus, Z32.12.

Objectives in Standardization of Symbols

The primary objectives in the development and coordination of these symbols is:

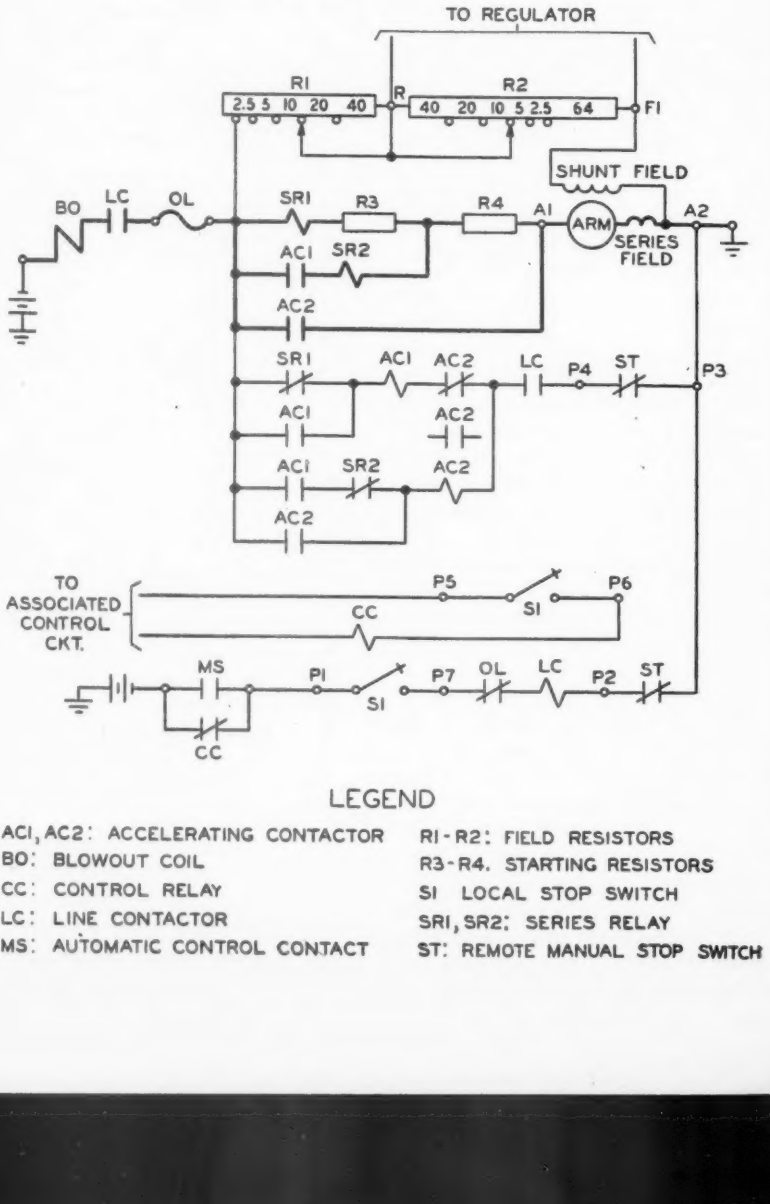
(*a*) To provide a uniform set of components and basic symbols from which symbols for complete devices can be evolved which will provide drawings easily followed during wiring;

(*b*) To make the depiction of apparatus as simple and clear-cut as possible, both from the viewpoint of drafting time required to draw them, and from their over-all appearance.

The published standards are of necessity always broad in scope and do not cover all possible combinations of symbols or components. It has also been

(*Continued on page* 328)

TYPICAL CONTROL CIRCUIT



LEGEND

AC1, AC2: ACCELERATING CONTACTOR
B0: BLOWOUT COIL
CC: CONTROL RELAY
LC: LINE CONTACTOR
MS: AUTOMATIC CONTROL CONTACT
R1-R2: FIELD RESISTORS
R3-R4. STARTING RESISTORS
SI LOCAL STOP SWITCH
SR1, SR2: SERIES RELAY
ST: REMOTE MANUAL STOP SWITCH

National Conference to Spur Progress of Farm Electrification

To be Held at Chicago Nov. 7-8

THE National Farm Electrification Conference, to be held in Chicago on Nov. 7 and 8, will bring together almost all groups interested in varied phases of the use of electricity on the farm, and will cover the broad subject of what must be done to make electricity as useful in agriculture as it is in industry. It will deal with utilization of electricity, rather than the extension of rural service.

The Conference, first of its kind in which so many groups are represented, is expected to attract hundreds of individuals and groups interested in raising farm living standards, and reducing farm production costs by increasing the profitable uses of electricity on farms. Research into new farm uses of electricity, cooperative activities designed to improve farm applications of electric service, and educational programs to teach the farmer the advantages of newly developed methods will all be discussed in the program.

Organizations participating in the conference include the American Society of Agricultural Engineers, Agricultural Editors' Association, National Grange, National Electrical Manufacturers Association, Edison Electric Institute, National Association of Domestic and Farm Pumping Equipment and Allied Manufacturers, National Retail Farm Equipment Association, Agricultural Research Administration, U. S. Department of Agriculture, and the U. S. Office of Education.

The Conference program will center on providing agricultural leaders and others with information which can be transmitted to farmers, on the know-how of taking full advantage of time and labor saving devices to advance the economic and convenience standards in rural areas.

George Kable of New York City, editor of Electricity on the Farm, and a pioneer in the farm electrification movement, was named chairman of the national conference. Truman Hienton, Washington, D. C., head of the division of farm electrification of the U. S. Agricultural Research Administration, was named vice-chairman.

The Conference, it is hoped, will help to coordinate the thinking of every organization and individual interested in farm electrification, so that farm organizations, agricultural colleges, the Department of Agriculture, manufacturers, power suppliers and others can jointly work toward the objectives of helping farmers to solve many of their chore and household problems electrically.

The farm electrification movement, which began in 1897, has grown rapidly in recent years, with power lines at present serving more than 3,000,000 of the nation's 5,950,000 farms. Hundreds of millions of dollars will be spent by power suppliers to bring electric service to the remaining non-electrified farms within the next few years.

Agricultural engineers feel that the job of farm electrification will not end when the nation's farms are connected to power lines. They view it as a continuing process, stretching over many years, as concerted efforts are intensified to produce new electrically-operated farm production equipment, and to disseminate all possible information concerning the practical use of such devices on the farm.

The Conference will be a working, rather than a listening, meeting, it is emphasized. All those present may participate. Subjects for discussion, in line with the utilization theme, will be welcome from the floor. While it is expected that the Conference will result in programs of action by various groups, there will be no obligation on participants other than to exchange ideas on making electricity an even more useful force in agriculture.

Any group, association or individual interested in the purposes of this Conference is welcome to attend and join in the program. Those wishing to cooperate are invited to make this fact known to the sponsors.

A preliminary program of the Conference follows:

Opening Remarks—Hon. Dwight H. Green, *Governor* of Illinois.

"Farm Electrification—An Important Job of the Extension Service."
Dr. H. C. Ramsower, *Director*, Agricultural Extension Service, Ohio State University, Columbus, Ohio.

"What National Farmers' Organizations Should be Doing About Farm Electrification."
Roger Corbett, *Secretary-Treasurer*, American Farm Bureau Federation, Chicago, Ill.

"Distributing, Selling, Installing, Servicing and Financing Electrical Products for the Farm."
Charles Pyle, *Managing Director*, National Electrical Wholesalers Association, New York, N. Y.

"What Electricity Should Mean to the Farm Wife."
Gertrude Dieken, *Editor*, Farmer's Wife Section, *Farm Journal*, Phila., Pa.

"Should College Students of Agriculture and Home Economics Receive Farm Electrification Training?"
C. E. Brehm, *Acting President*, University of Tennessee, Knoxville, Tenn.

"Working With Farm Boys and Girls."
Speaker to be announced.

"The Man Who Sells the Farmer."
Edward Schriefer, Sales Analysis Institute, Chicago, Ill.

"The Power Supplier's Concern over Farm Prosperity and What He Should Do About It In His Area."
A. C. Spurr, *President*, Monongahela Power Company, Fairmont, W. Va.

"Good Farm Wiring Is Essential to Successful Use of Electricity—How To Get It."
Wm. A. Ritt, *Secretary-Manager*, North Central Electrical Industries, Minneapolis, Minn.

"Vocational Training's Part In Farm Electrification."
Dr. W. T. Spanton, *Chief*, Agricultural Education Service, U.S. Office of Education, Washington, D. C.

"How To Get Farmers To Do Something About It."
Dr. Gladys Gallup, *Chief* of Division of Studies and Training, Extension Service, U.S.D.A., Washington, D. C.

"Manufacturers' Farm Electrification Program."
C. H. Lang, *Vice President*, General Electric Company, Schenectady, N. Y.

"Understanding Mr. Kilowatthour."
F. T. Whiting, *Vice President*, Westinghouse Electric Corporation, Pittsburgh, Pa.

"The Place of Farm Electrification Research in Agricultural Research."
Harry J. Reed, *Director* of Agricultural Experiment Station, Purdue University, Lafayette, Ind.

"In-Service Farm Electrification Training."
P. T. Montfort, *Research Associate*, Texas A & M College, College Station, Texas.

This is a facsimile reproduction of a splendid story on a resuscitation by the pole-top method which appeared in the August 1946 *Contact*, employee publication of the New England Power Systems Companies. It was written by HUGH F. LOVERING, Safety Engineer.

Lineman Is Saved

BY POLE TOP METHOD

DUE to a fellow workman's expert knowledge of what to do in an emergency and his skill in applying that knowledge promptly, James Griffin, New England Power Service Company lineman, is alive today.

The scene for this highly dramatic rescue was laid in a suburban area in Warwick, R. I. Here at 10:45 on the warm morning of June 26 a Service Company line crew and a similar crew from The Narragansett Electric Company were engaged in making changes to improve electric distribution construction.

Griffin and his rescuer, Burton J. Smith, both first class linemen, were working on pole No. 26 at the corner of Warwick and Harding Avenues with James E. Handy and Charles E. Fleury attending them as groundmen near the base of the pole. Foreman John E. Healey and other members of his crew were busy with details of line work at near-by locations.

The two men on whom interest centers, had removed a double six-pin primary buck arm and were preparing to replace it by a double eight-pin arm in a new lower position on the pole. One 4000 volt wire and the primary neutral wire were held in grips attached to two insulator pins on a crossarm higher up on the pole.

Rubber line protectors or hose had been placed on street light and primary wires adjacent to the work area, but a short section of one primary wire, where it had been removed from the crossarm, had not been covered. Three low voltage secondary service wires to a near-by customer's premises led off the pole at a point a little below where the men were working. These secondary wires were not covered by rubber hose.

In order to get into position to handle the new crossarm which Handy and Fleury were sending up, Griffin straddled the secondary neutral wire. Then, in moving about slightly, he brushed his shoulder, covered by a perspiration-soaked shirt, against the section of 4000 volt wire not protected by line hose. He might have "got away with it" on a cold dry day with a couple of layers of woolen cloth between him and eternity. But on a hot summer day the situation was virtually atomic in death-dealing possibilities. Griffin "blacked out" instantly.

Bad off as he then was, fate dealt the victim a second and harder blow. Unconscious and helpless, he fell back with his neck firmly against the 4000 volt wire. This contact teamed up with the other contact at the inside of his right leg against the secondary neutral wire to create a perfect path to ground.

From his position opposite the victim Burton Smith heard the roar of the electric arc, saw Griffin "frozen" to the wires and readily sensed his peril. Following with instant action, Smith swung around the pole by his safety strap into a position partially behind Griffin, knocked him clear of contact, pushed the primary wire out of the way, grasped the limp and breathless body around the waist from behind and *started pole top resuscitation.*

All this was done in less time than it takes to read that last paragraph. This is said by way of emphasizing the value of this latest life-saving method now in the head, hands and heart of the present-day lineman. Just picture the delay in providing relief to oxygen-starved lungs when, under the old method, it was necessary to lower a victim of electrocution on a pole to the ground before the prone pressure method could be applied, frequently five to 10 minutes. Now relief is given much more quickly than ever before under almost any conditions.

In this case for the first minute or two Griffin showed no signs of life. But within three minutes, as men best judge time under stress, Smith was rewarded by signs that the victim was coming back. Soon a few incoherent words were spoken by Griffin. But Smith, who still "knew what to do and did it" kept on with "pole top."

Meanwhile, other members of the crew had sprung into action. Fleury and Handy at the base of the pole had also heard the arc and had seen what followed. They called out to Peter Corliss, their truck driver, one pole section away. Corliss, in turn, ran one section further and summoned Foreman Healey, who hurried to the scene, telling Corliss to call other Service Company men near-by. Also responding promptly in the emergency were members of a Narragansett line crew under Foreman Michael E. Tulley.

Arriving at pole No. 26 in about a minute from the time of the accident, Healey quickly sized up the situation and told Smith to continue pole top resuscitation. The first linemen to arrive equipped for climbing were Fabian S. Gendreau of Healey's crew and Joseph P. Bradley of Tulley's crew. These men were sent up the pole at once. As Smith continued with resuscitation they rigged Griffin's safety belt and strap with a rope, making a "saddle hitch" sling in the approved manner for lowering the injured man.

By now four or five minutes had elapsed and Griffin was rapidly regaining consciousness and the ability to breathe under his own power. It was therefore not considered necessary to continue the alternate pressure and release as he was being lowered to the ground.

Placed on a blanket, Griffin was given relief by the prone pressure method as a precautionary measure until the arrival of an ambulance summoned by a local police officer. Theodore Muller, Fabian Gendreau, Victor Erickson and Carl Graff coöperated in prone pressure application. The three other than Gendreau were members of the Narragansett crew.

Rescuer Burton J. Smith

Pete Corliss applied ointment as first aid for Griffin's severe burns. James Handy and Timekeeper Howard Cutler rode in the ambulance to the Rhode Island Hospital in Providence, but by then Griffin was breathing normally and seemed reasonably conscious.

It has taken a little telling but all that has been told took less than 20 minutes! And by 11:30 James Griffin, snatched from death if ever a man was, lay safe in a hospital bed. He may be there some long days to come. His recovery from the deep searing burns of an electric arc may be slow and painful. But, thanks to Burton Smith and his priceless knowledge of "pole top," Griffin lives to climb again, as he has expressed it himself.

The Pole Top Method was introduced on the System seven years ago to supplement expert knowledge of the Schafer Prone Pressure Method which had been widely acquired and successfully applied on a number of occasions. During those seven years there has been a feeling that, sooner or later, there would be an opportunity to say, "Well, that certainly paid dividends."

Every time another line crew was trained and started in on regular monthly practice someone has said, "Hope you never have a chance to use Pole Top but there it is—just in case!"

Well, all this paid off bountifully for James Griffin and Burton Smith on June 26. By "all this" we mean "quick thinking, expert knowledge and intense desire to save the life of a co-worker and buddy" to quote the Edison Electric Institute which first gave us the pole top technique.

Everything in connection with the handling of this case after the accident was commendable. The members of the entire cast played their parts perfectly. Others stood ready to assume roles as needed. In this, our first successful example of pole top resuscitation, alertness, skill and teamwork combined to give the drama a perfect ending. H. F. L.

Personnel of E. E. I. Committees for 1946-1947

Appointments to Edison Electric Institute Committees for the Administrative year 1946-1947 have just been announced by Grover C. Neff, President of the Institute. Personnel are listed in the following pages.

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R. O. LOOMIS, Georgia Power Co., Atlanta, Ga.
C. T. MALLOY, Southern California Edison Co. Ltd., Los Angeles, Calif.
J. S. MALOY, West Penn Power Co., Pittsburgh, Pa.
V. M. MARQUIS, Pacific Gas & Electric Co., San Francisco, Calif.
G. B. MCCABE, The Detroit Edison Co., Detroit, Mich.
J. E. MCCORMACK, Consolidated Edison Co. of New York Inc., New York, N. Y.
W. MCLEAN, Consolidated Gas Electric Light & Power Co., Baltimore, Md.
R. C. MORRIS, Union Electric Co. of Missouri, St. Louis, Mo.
R. E. MORSE, American Gas & Electric Service Corp., New York, N. Y.
L. L. NEWMAN, New Orleans Public Service Inc., New Orleans, La.
F. W. NIMMER, Ohio Edison Co., Akron, Ohio.
E. F. NUEZEL, The Cincinnati Gas & Electric Co., Cincinnati, Ohio.
E. W. OESTERREICH, Duquesne Light Co., Pittsburgh, Pa.
F. W. PACKER, Pennsylvania Power & Light Co., Allentown, Pa.
W. C. PHILLIPS, New England Power Service Co., Boston, Mass.
M. H. POWELL, Public Service Co. of Colorado, Denver, Colo.
M. H. PRATT, Central New York Power Corp., Syracuse, N. Y.
J. A. PULSFORD, Public Service Electric & Gas Co., Newark, N. J.
T. A. PURTON, Utah Power & Light Co., Salt Lake City, Utah.
B. C. RUSSELL, Idaho Power Co., Boise, Idaho.
E. V. SAYLES, Consumers Power Co., Jackson, Mich.
H. P. SEELYE, The Detroit Edison Co., Detroit, Mich.
A. E. SILVER, Ebasco Services Inc., New York, N. Y.
C. T. SINCLAIR, Duquesne Light Co., Pittsburgh, Pa.
F. W. SMITH, Virginia Electric & Power Co., Richmond, Va.
L. G. SMITH, Consolidated Gas Electric Light & Power Co., Baltimore, Md.
HOWARD E. STITES, Central Illinois Public Service Co., Springfield, Ill.
WALTER A. UPHAM, The United Illuminating Co., New Haven, Conn.
G. S. VAN ANTWERP, Philadelphia Electric Co., Philadelphia, Pa.
C. V. WADDINGTON, Kansas Gas & Electric Co., Wichita, Kan.
W. R. WEISE, The Cincinnati Gas & Electric Co., Cincinnati, Ohio.
L. P. WORKS, Wisconsin Public Service Corp., Green Bay, Wis.
O. J. ZWIEBEL, The Connecticut Light & Power Co., Waterbury, Conn.

GENERAL COMMITTEES

ACCIDENT PREVENTION COMMITTEE

Chairman, D. C. STEWART, Niagara Hudson Power Corp., Buffalo, N. Y.
Secretary, E. S. EVANS, Edison Electric Institute, New York, N. Y.
H. P. ALLEN, Rockland Light & Power Co., Boston, Mass.
E. E. BECK, Idaho Power Co., Boise, Idaho.
H. H. BERMAN, Consolidated Gas Electric Light & Power Co., Baltimore, Md.
C. B. BOULET, Wisconsin Public Service Corp., Milwaukee, Wis.
J. T. BRADSHAW, Puget Sound Power & Light Co., Seattle, Wash.
W. F. BROWN, Consolidated Edison Co. of New York, Inc., New York, N. Y.
J. G. DICKINSON, Wisconsin Electric Power Co., Milwaukee, Wis.
GEORGE S. DIEHL, Pennsylvania Water & Power Co., Baltimore, Md.
R. P. DOUGLAS, The Detroit Edison Co., Detroit, Mich.
D. C. DUNCAN, Appalachian Electric Power Co., Bluefield, W. Va.
B. K. DUNSHEE, Pacific Gas and Electric Co., San Francisco, Calif.
F. W. FISHER, Rochester Gas & Electric Corp., Rochester, N. Y.
ROY M. GODWIN, Philadelphia Electric Co., Philadelphia, Pa.
E. E. GROVER, The Columbus & Southern Ohio Electric Co., Columbus, Ohio.
EARL L. HEWITT, Utah Power & Light Co., Salt Lake City, Utah.
EVERETT L. IDE, The United Illuminating Co., Bridgeport, Conn.
E. J. KREH, Duquesne Light Co., Pittsburgh, Pa.
DON T. LACEY, Central Illinois Public Service Co., Springfield, Ill.
WILLS MACLACHLAN, 620 University Avenue, Toronto, Can.
J. P. MCCANN, New England Power Service Co., Boston, Mass.
HOWARD MILLER, Southern California Edison Co., Ltd., Los Angeles, Calif.
J. B. PORCHER, Ohio Edison Co., Akron, Ohio.
C. N. RAKESTRAW, The Cleveland Electric Illuminating Co., Cleveland, Ohio.
ALBERT A. RALL, Kansas City Power & Light Co., Kansas City, Mo.
W. T. ROGERS, Ebasco Services Incorporated, New York, N. Y.
E. C. RUE, Boston Edison Co., Boston, Mass.
GEORGE J. RUOFF, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.
C. J. SMITH, Consolidated Edison Co. of New York, Inc., New York, N. Y.
W. R. SMITH, Public Service Electric & Gas Co., Newark, N. J.
H. O. SPRINKLE, Monongahela Power Co., Fairmont, W. Va.
J. E. STOTT, Georgia Power Co., Atlanta, Ga.
H. F. WEBB, West Penn Power Co., Pittsburgh, Pa.

INDUSTRIAL RELATIONS COMMITTEE

Chairman, H. K. BRECKENRIDGE, West Penn Power Co., Pittsburgh, Pa.
Vice-Chairman, SYDNEY L. HALL, The Cleveland Electric Illuminating Co., Cleveland, Ohio.
Secretary, E. S. EVANS, Edison Electric Institute, New York, N. Y.
K. P. APPLEGATE, The Hartford Electric Light Co., Hartford, Conn.
J. C. ARNELL, Consolidated Edison Co. of New York, Inc., New York, N. Y.
DONALD A. BARTLETT, Western Massachusetts Electric Co., Greenfield, Mass.
A. M. BOYD, Philadelphia Electric Co., Philadelphia, Pa.
C. B. BOULET, Wisconsin Public Service Corp., Milwaukee, Wis.
V. C. BRENNAN, Union Electric Company of Missouri, St. Louis, Mo.
E. J. BRILL, Pennsylvania Power & Light Co., Allentown, Pa.
J. W. CROTHERS, Consolidated Gas Electric Light & Power Co., Baltimore, Md.
A. L. COLLIGAN, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.
WILLIAM J. COOPER, The United Illuminating Co., New Haven, Conn.
W. N. CUMMINS, JR., Virginia Electric & Power Co., Richmond, Va.
E. W. DOEBLER, Long Island Lighting Co., Mineola, N. Y.
H. L. DONALDSON, Duquesne Light Co., Pittsburgh, Pa.
M. T. DUNLAP, Carolina Power & Light Co., Raleigh, N. C.
H. R. FRANKEL, The Commonwealth & Southern Corp., New York, N. Y.
J. O. HENKEL, Alabama Power Co., Birmingham, Ala.
E. E. HILL, Consolidated Edison Co. of New York, Inc., New York, N. Y.
F. L. LARKIN, Wisconsin Electric Power Co., Milwaukee, Wis.
SYLVESTER F. LEAHY, The Detroit Edison Co., Detroit, Mich.
G. E. MCKENNA, Ohio Edison Co., Akron, Ohio.
I. O. MALL, Ebasco Services Incorporated, New York, N. Y.
L. J. NEVRAUMONT, Pacific Gas and Electric Co., San Francisco, Calif.
RALPH E. NOCK, New England Power Service Co., Boston, Mass.
H. A. PETERSON, American Gas & Electric Service Corp., New York, N. Y.
FRED R. RAUCH, The Cincinnati Gas & Electric Co., Cincinnati, Ohio.
H. M. SHARP, Buffalo Niagara Electric Corp., Buffalo, N. Y.
W. F. TAIT, Public Service Electric & Gas Co., Newark, N. J.
R. H. THOMPSON, Central Illinois Public Service Co., Mattoon, Ill.

INSURANCE COMMITTEE

Chairman, J. H. NICKELL, Philadelphia Electric Co., Philadelphia, Pa.
Vice-Chairman, R. FLEMING, Stone & Webster Service Corp., New York, N. Y.
I. M. CARPENTER, Ebasco Services Incorporated, New York, N. Y.
R. D. CONSTABLE, Niagara Hudson Power Corp., Syracuse, N. Y.
F. D. DECKMAN, Columbia Engineering Corp., Columbus, Ohio.
F. J. HOLUB, Duquesne Light Co., Pittsburgh, Pa.
WILLS MACLACHLAN, 620 University Ave., Toronto, Can.
JOHN L. MACLEOD, The Detroit Edison Co., Detroit, Mich.
H. M. PARKER, Central Illinois Public Service Co., Springfield, Ill.
WALTER O. RANDLETT, Virginia Electric & Power Co., Richmond, Va.
J. G. REESE, Consolidated Gas Electric Light & Power Co., Baltimore, Md.
A. W. REID, American Gas & Electric Service Corp., New York, N. Y.

A. Royal Wood, The United Illuminating Co., New Haven, Conn.

MEMBERSHIP COMMITTEE

Chairman, J. F. Fogarty, The North American Co., New York, N. Y.

D. C. Barnes, Engineers Public Service, Co., Inc., New York, N. Y.

R. H. Tapscott, Consolidated Edison Co. of New York, Inc., New York, N. Y.

Justin R. Whiting, The Commonwealth & Southern Corp., New York, N. Y.

PRIZE AWARDS COMMITTEE

Chairman, H. M. Sawyer, American Gas & Electric Service Corp., New York, N. Y.

Ernest R. Acker, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.

Clarence L. Law, Consolidated Edison Co. of New York, Inc., New York, N. Y.

RATE RESEARCH COMMITTEE

Chairman, E. N. Strait, Public Utility Engineering & Service Corp., Chicago, Ill.

Vice-Chairman, L. R. Lefferson, Ebasco Services Incorporated, New York, N. Y.

H. H. Agee, Public Service Electric & Gas Co., Newark, N. J.

S. W. Andrews, American Gas & Electric Service Corp., New York, N. Y.

R. E. Caywood, West Penn Power Co., Pittsburgh, Pa.

Ira L. Craig, Philadelphia Electric Co., Philadelphia, Pa.

R. D. Cutler, The Hartford Electric Light Co., Hartford, Conn.

Malcolm G. Davis, Gilbert Associates, New York, N. Y.

C. G. Eichelberger, The Cincinnati Gas & Electric Co., Cincinnati, Ohio.

C. L. Follmer, Consolidated Gas Electric Light & Power Co., Baltimore, Md.

Lester W. Frank, Western Massachusetts Electric Co., Springfield, Mass.

N. E. French, Duquesne Light Co., Pittsburgh, Pa.

Walter B. Gesell, Oklahoma Gas & Electric Co., Oklahoma City, Okla.

K. W. Hasbrouck, New York State Electric & Gas Corp., Ithaca, N. Y.

Russell Hastings, Boston Edison Co., Boston, Mass.

Walter J. Herrman, The Commonwealth & Southern Corp., New York, N. Y.

E. F. Kelly, Central Illinois Public Service Co., Springfield, Ill.

George Kinsman, Pacific Gas and Electric Co., San Francisco, Cal.

C. R. Landrigan, The Detroit Edison Co., Detroit, Mich.

A. V. S. Lindsley, The Connecticut Light & Power Co., Waterbury, Conn.

H. I. Miller, Wisconsin Public Service Corp., Oshkosh, Wis.

C. E. Neil, The North American Co., New York, N. Y.

L. V. Nelson, Union Electric Co. of Missouri, St. Louis, Mo.

H. H. Plank, Delaware Power & Light Co., Wilmington, Del.

W. E. Rogers, Indianapolis Power & Light Co., Indianapolis, Ind.

Arthur Schultheis, Central New York Power Corp., Syracuse, N. Y.

F. M. Terry, Consolidated Edison Co. of New York, Inc., New York, N. Y.

Edwin Vennard, Middle West Service Co., Chicago, Ill.

H. C. Webb, Puget Sound Power & Light Co., Seattle, Wash.

C. A. Williams, The United Illuminating Co., New Haven, Conn.

STATISTICAL COMMITTEE

Chairman, Winsor Martin, Public Utility Engineering & Service Corp., Chicago, Ill.

W. G. Bourne, Jr., The Commonwealth & Southern Corp., New York, N. Y.

P. J. Fallon, Middle West Service Co., Chicago, Ill.

M. D. Field, The California-Oregon Power Co., Medford, Ore.

Alfred Gruhl, Wisconsin Electric Power Co., Milwaukee, Wis.

C. D. Hamlin, Buffalo Niagara Electric Corp., Buffalo, N. Y.

Alan W. Hastings, Epsco, Inc., New York, N. Y.

Rudolph Jenny, Pacific Gas and Electric Co., San Francisco, Cal.

F. A. Keane, Public Service Electric & Gas Co., Newark, N. J.

H. C. Lampe, Ebasco Services Incorporated, New York, N. Y.

C. R. Landrigan, The Detroit Edison Co., Detroit, Mich.

H. G. Miller, Public Utility Engineering & Service Corp., Chicago, Ill.

F. H. Patterson, Rochester Gas & Electric Corp., Rochester, N. Y.

G. J. Read, Consolidated Edison Co. of New York, Inc., N. Y.

Fred L. Shimer, Central Illinois Public Service Co., Springfield, Ill.

O. E. Smith, Consolidated Gas Electric Light & Power Co., Baltimore, Md.

William Storz, Philadelphia Electric Co., Philadelphia, Pa.

Berton Stout, Indianapolis Power & Light Co., Indianapolis, Ind.

C. L. Walling, American Gas & Electric Service Corp., New York, N. Y.

TRANSPORTATION COMMITTEE

Chairman, Jean Y. Ray, Virginia Electric & Power Co., Richmond, Va.

T. A. Bradley, Kansas City Power & Light Co., Kansas City, Mo.

R. M. Cregar, Public Service Electric & Gas Co., Newark, N. J.

Linn Edsall, Philadelphia Electric Co., Philadelphia, Pa.

E. J. Graham, Public Service Co. of Colorado, Denver, Colo.

S. M. Middleton, San Diego Gas & Electric Co., San Diego, Cal.

J. R. North, The Commonwealth & Southern Corp., Jackson, Mich.

H. A. Peterson, American Gas & Electric Service Corp., New York, N. Y.

A. N. Snyder, The Detroit Edison Co., Detroit, Mich.

H. L. Swift, Ebasco Services Incorporated, New York, N. Y.

Randolph Whitfield, Georgia Power Co., Atlanta, Ga.

Donald K. Wilson, New York Power & Light Corp., Albany, N. Y.

Guest Members

Willard H. Head, Sr., Public Service Co. of New Hampshire, Manchester, N. H.

W. H. Mann, The Toledo Edison Co., Toledo, Ohio.

CODES AND STANDARDS COMMITTEE

Chairman, H. B. Bryans, Philadelphia Electric Co., Philadelphia, Pa.

A. H. Kehoe, Consolidated Edison Co. of New York, Inc., New York, N. Y.

E. C. Stone, Duquesne Light Co., Pittsburgh, Pa.

PERSONALS

CHARLES G. BILL, vice president of the Connecticut Power Co., has retired following an association with the utility industry that covered a period of 45 years. Mr. Bill organized and developed the Union Electric Light & Power Co. in 1901 to bring electric power to Farmington and Unionville for the first time. Union company properties were purchased by the Connecticut Power Co. in 1928 and when the two companies merged in 1936, Mr. Bill became vice president. He will continue as a member of the divisional committee of the board.

J. REED HARTMAN, manager of the electric sales department of the Cincinnati Gas & Electric Co., has been elected a vice president of the company.

Mr. Hartman joined the Cincinnati utility in 1923 as a research engineer. Three years later he transferred to the company's electric sales department as an industrial engineer. In 1928 he was promoted to manager of the department.

A graduate of the University of Cincinnati, Mr. Hartman is vice chairman of the power heating committee of the Edison Electric Institute.

FRANK J. BISCHOFF, who has been controller of Consolidated Edison Company of New York, Inc., for the past twenty-three years, has been elected a vice president of the Westchester Lighting Co., which is part of the Consolidated Edison System.

CHARLES E. EBLE was elected controller of the Consolidated Edison Co. and was also appointed controller of the New York Steam Corporation. He was formerly senior assistant controller of Consolidated Edison.

JOHN V. CLEARY was appointed senior assistant controller of Consolidated Edison and will be in charge of the company's general accounting department.

It was also announced by the company that ARTHUR E. HALD will become auditor on October 1. He will take the place of REUEL O. LAUNEY, who plans to retire on that date under the company's age rule. Mr. Hald has been manager of the auditing department since 1941.

B. S. RODEY, associate controller, has been placed in charge of the company's tax department.

Mr. Bischoff has been with the Consolidated Edison System since 1903. He held various positions in the accounting department of the company. In 1918 he enlisted for military service in World War I. He was elected controller of the company in 1923 and controller of New York Steam in 1943.

Mr. Eble joined Consolidated Gas Company as corridor boy in 1916. He was appointed assistant controller in 1935 and senior assistant controller in 1936.

WILLIAM G. PARMENTER has been made superintendent of substation construction and maintenance for Georgia Power & Light Co. at Valdosta. Mr. Parmenter recently returned to the company after four years of duty in the Army Signal Corps. He held the rank of captain.

J. O. TOBEY, superintendent of the Pacific Gas & Electric Co. electrical division at Sacramento, Calif., has retired after 45 years' service in the power field. Mr. Tobey's electrical career began in Shasta County in 1901 as a lineman with Keswick Light & Power Co., which later was absorbed by P. G. & E. From 1909 until 1918 he was power division superintendent in Sacramento, after which he supervised the city transportation system until 1943. His successor in the electrical division will be W. L. Hill, superintendent of lines for P. G. & E.

EDWARD C. BOWER has been appointed executive assistant to President Thomas G. Dignan of the New England Power System companies centering at Malden, Mass. Mr. Bower was graduated from Norwich University in 1926 and joined the Lowell Electric Light Corp. soon afterwards as a student engineer. He became assistant to the superintendent of distribution in 1929; was merchandising manager from 1931 to 1935 at Lowell and from 1935 to 1939 at the Worcester County Electric Company, Worcester. He was assistant to the general manager from 1939 to 1942, when he entered the armed services, returning early this year with the rank of lieutenant colonel after extended service in this country, Hawaii and Okinawa.

HARRY C. WILLIAMSON, assistant to vice president and real estate and tax officer of the Union Electric Co., St. Louis, was recently elected president of the Utility Tax Representatives Association of Illinois.

EARL O. SLAYBAUGH has been appointed division superintendent of the southern division, electric production and transmission department of the Consumers Power Co. at Battle Creek. He succeeds FRANK A. NOYES, who has retired from that position after 27 years of service. Mr. Slaybaugh, who has been Mr. Noyes' assistant since 1922, first joined the company in 1911 and after three years left, but returned the following year. Mr. Noyes joined Consumers in 1917 as division superintendent of the eastern division with headquarters in Saginaw. He was transferred to the superintendency of the southern division in 1919. Before joining Consumers Power Mr. Noyes spent four years with General Electric, two years in Nicaragua as electrical engineer, with a mining company, for which he built a dam, a power house and a transmission line, and eleven years as superintendent of electric distribution for the power and tramway company in Rio de Janeiro, Brazil.

C. R. NICHOLS, chief engineer of the civil mechanical engineering department of the Cleveland Electric Illuminating Co. for the past 20 years, has retired. Mr. Nichols was the guiding hand in the interior designing of many of the plants and substations constructed during the company's greatest building era. He was with the Detroit Edison before taking charge of the Cleveland utility's mechanical engineering department. It was in 1926 that he was made chief engineer of the combined civil and mechanical engineering departments.

T. T. PARKER, who had been head of the Arizona Edison Co.'s southern district in Douglas for the past two years, has been made manager of the company's construction and purchasing de-

partment, with headquarters in Phoenix. Mr. Parker has been with the company since 1940, serving successively as division manager in Douglas, manager of the mountain district, and southern district supervisor. H. H. IDLE, who had been serving as supervisor of the utility's northern district, succeeds to the position vacated by Mr. Parker.

FRED T. BEAR has been made chief engineer of the Engineering Department of the Delaware Power & Light Co. Since June 1945, when the department was formed, he has been serving as electrical engineer in charge of planning and supervising engineering development of both Delaware Power and Eastern Shore Public Service Co.

The new appointee was graduated from Penn State University in 1922 and entered the employ of the Philadelphia Suburban Gas & Electric Co. at Phoenixville. This office was moved to Wyncote; and, following a merger with Counties Gas and Electric Co., Norristown, he was transferred to the Engineering Development Department of the United Gas Improvement Co. in Philadelphia.

Mr. Bear went to the Delaware Power & Light Co. in Wilmington in an engineering capacity late in 1928.

Other personnel changes include the appointment of EVALD STREET as assistant chief engineer, that of F. J. HENSEL as superintendent of the Distribution Department with which the Transmission Department has been merged, and that of R. K. GRUBB as assistant superintendent.

WILLIAM CORRIGAN has been made supervisor of system operation and will head up system and substation operation in the newly designated Stations Department under C. E. Taylor.

R. J. BEAUMONT, vice president of the Shawinigan Water & Power Company in charge of distribution, has been made a vice president of the Quebec Power Company, a subsidiary of Shawinigan. Mr. Beaumont has been a director of Quebec Power since 1940.

Appointment of two new department heads to fill vacancies created by recent deaths has been announced by the Rochester Gas & Electric Corp., Rochester, N. Y.

RALPH H. MCCUMBER has been named superintendent of the electrical department to succeed the late Walter J. Consler. Mr. McCumber entered the University of Rochester with the class of 1921, but World War I interrupted his college career. After a period of service with the U. S. Navy he returned to the university and was awarded a B. S. degree in mechanical engineering in 1925. While still in college he entered the employ of the Rochester Utility at Station 3 and held various positions in the department of electric and steam generation. Since 1940 Mr. McCumber has been superintendent of steam and electric generation.

SYDNEY ALLING has been appointed manager of the industrial department to succeed the late Ivar Lundgaard. Receiving his education at the University of Rochester and M. I. T., Mr. Alling became identified with Rochester Gas in 1911 and served with the engineering, construction, distribution and industrial departments. Since 1931 he has been on the staff of the industrial department.

JOHN A. REICH, formerly connected with the Virginia Electric & Power Co., has been named system superintendent of production for Gulf States Utilities Co., Beaumont, Tex. He succeeds Tom E. Crossan, who is now connected with Virginia Electric & Power.

Mr. Reich, who was division superintendent of power stations and substations for the central and southern divisions of the Virginia utility, has long been connected with Engineers Public Service Co. subsidiary properties.

In 1918 he became identified with the Stone & Webster managed utility property at Ponce, Puerto Rico. Two years later he went to Texas, being transferred to Galveston, where he remained for two years, subsequently being assigned to Houston, where he worked for a year before going to El Paso Electric Co. It was in 1928 that Mr. Reich came east with the Virginia Electric & Power Co. in Richmond.

Tribute to a Retiring Utility Man

"A Continuing Leadership"

"THE retirement of Harry E. Duren as vice-president of the Western Massachusetts Electric company, announced over the week-end to the company's directors, is more than the departure of an efficient public figure. It is a milestone in the civic and industrial history of this entire area.

"Few men have typified so well the word 'service' and few men have become so closely allied in the public eye with an industry. To thousands of Franklin county residents, Harry Duren was 'the electric light company' and he has represented all that was best in that public utility.

"Duren's history has been the Western Massachusetts Electric company's history also. When he arrived in 1916 as an engineer for the Turners Falls Power and Electric Company the electrical generating and distribution field in this section of New England was still in its infancy with service uncertain, no definite coordination of facilities and comparatively few householders subscribing to usage of this strange new energy.

"His return to this area in 1921 as manager of the Greenfield Electric Light and Power company found many local homes still unwired while the rural areas of Franklin county were largely without service. His early years in Greenfield saw an untiring campaign for service extension which today has brought electrical energy into nearly every home and farmhouse in the area, transforming once arduous tasks into child's play.

"Through the years Harry Duren grew in stature as his company expanded. His working hours were long; his travels were limited to study and survey into improved methods. Floods and hurricanes tried his ingenuity and his widely recognized administrative capacity, but each time triumph crowned the efforts of himself and his men.

"Down the quarter-century span, Duren's foremost thoughts have been for the public he helped serve, for his assistants in the field and for the men and women whose life savings have been invested in his company. He has been untiring and far-sighted in his planning, choosing his men carefully and guiding them with a deep sense of responsibility toward their futures and toward the advancement of the area he served.

"Like every other American who believes in the system of free enterprise, Duren has fought bitterly against the encroachments of federal control. When the war halted his company's program of expansion into rural sections, he impatiently bided his time until he saw the day when every community was served.

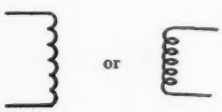
"Today he relinquishes the reins. Still healthy and active, he nevertheless makes

way for the men who received their training at his elbow. To them Harry Duren passes on a tradition of service which few men ever attain, and into his retirement—as much of a retirement as any born leader can bear—he carries that restless, seeking spirit which will still keep him high in the councils of his profession."—Editorial in Greenfield, Mass., *Recorder-Gazette*.

Coordinated Graphic Symbols

(*Continued from page* 312)

necessary at this time to include some alternatives, although it is felt that general usage will in time make one or the other of these alternates obsolete. For example:



both indicate transformer or coil windings. It is hoped that ultimately one or the other of these alternates will be dropped out and that the remaining alternate will resolve itself into a single accepted symbol.

Future Standards

With the advent of peace and the return of peacetime production, it is still important that the work on these symbols does not remain static, and that we continue with our standardization and improvement in order to hold and further the gains which we have already made through our past efforts. This is particularly important since the general fields of power and communication will continue to overlap in peacetime to almost as large an extent as they did during the war. For example, with the present outlook, rural electrification is taking a large place in the thinking of both government and industry. A carrier system whereby telephone service and electric power are provided to the rural subscriber at the same time over one transmission system is planned with this project.

One can further envision peacetime uses for many of the devices which have been developed during the war, particularly in the electronic field, where great advances have been made during the past four or five years.

CONVENTIONS AND MEETINGS

1946

OCTOBER

1-3 Meter and Service Committee, EEI, Hotel Roosevelt, New Orleans, La.
3-4 Southeastern Electric Exchange, Engineering and Operation Sections, Henry Grady Hotel, Atlanta, Ga.
4-5 Electrical Equipment Committee, EEI, New Ocean House, Swampscott, Mass.
7-8 Prime Movers Committee, EEI, Hotel Roosevelt, New Orleans, La.
7-8 Transmission and Distribution Committee, EEI, Cavalier Hotel, Virginia Beach, Va.
7-11 American Gas Association, Atlantic City, N. J.
7-11 National Safety Congress, Hotels Stevens, Congress and Palmer House, Chicago, Ill.
14-16 Southern Section, IAEI, George Vanderbilt Hotel, Asheville, N. C.
14-18 National Electrical Contractors Association, Ritz Carlton Hotel, Atlantic City, N. J.
17-18 Southeastern Electric Exchange, Accounting Section, Fort Sumter Hotel, Charleston, S. C.
21-23 Western Section IAEI, Gibson Hotel, Cincinnati, Ohio.
24-25 Pennsylvania Electric Association, Electrical Equipment Committee, Lord Baltimore Hotel, Baltimore, Md.
24-25 Pennsylvania Electric Association, Transmission and Distribution Committee, Abraham Lincoln Hotel, Reading, Pa.
27-31 National Electrical Manufacturers Association, Annual Meeting, Hotel Traymore, Atlantic City, N. J.
28-30 Eastern Section, IAEI, Mark Twain Hotel, Elmira, N. Y.
29 Missouri Valley Electric Association, Rural Round Table, Continental Hotel, Kansas City, Mo.
30-31 Missouri Valley Electric Association, Sales and Rural Conference, Hotel Continental, Kansas City, Mo.
31-Nov. 1 Accident Prevention Committee, EEI, Hotel Statler, Buffalo, N. Y.
31-Nov. 1—Missouri Valley Electric Association, Accounting Conference, Continental Hotel, Kansas City, Mo.

NOVEMBER

6-8 Southeastern Electric Exchange, General Sales Conference, Atlanta Biltmore Hotel, Atlanta, Ga.
7-8 National Farm Electrification Conference, Sherman Hotel, Chicago, Ill.
7-8 Pennsylvania Electric Association, Systems Operating Committee, Sky Top Lodge, Sky Top, Pa.
12-15 National Association of Railroad and Utilities Commissioners, New Orleans, La.
14-15 Pennsylvania Electric Association, Communications Committee, Benjamin Franklin Hotel, Philadelphia, Pa.
22-23 New Jersey Utilities Association, Seaview Country Club, Absecon, N. J.

DECEMBER

2-6 The American Society of Mechanical Engineers, Hotel Pennsylvania, New York, N. Y.

1947

JANUARY

13-15 Canadian Electrical Association, annual winter conference, Chateau Frontenac, Quebec City, Que.
27-31 American Institute of Electrical Engineers, New York, N. Y.

MARCH

3-5 Canadian Electrical Association, Western Conference, Vancouver, B. C.

APRIL

March 31-April 3 Thirteenth Annual Sales Conference, EEI, Edgewater Beach Hotel, Chicago, Ill.
7-9 AGA-EEI National Accounting Conference, Hotel Statler, Buffalo, N. Y.
28-30 Engineering Committees, EEI, Edgewater Beach Hotel, Chicago, Ill.

MAY

5-9 National Electrical Wholesalers Association, Hotel Traymore, Atlantic City, N. J.
27-29 National Association of Purchasing Agents, Chicago, Ill.

JUNE

2-5 EDISON ELECTRIC INSTITUTE, Annual Meeting, Atlantic City, N. J.
18-20 Canadian Electrical Association, 57th Annual Convention, Algonquin Hotel, St. Andrews, N. B.

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

OFFICERS

GROVER C. NEFF, *President*.....Wisconsin Power & Light Co., Madison, Wis.
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